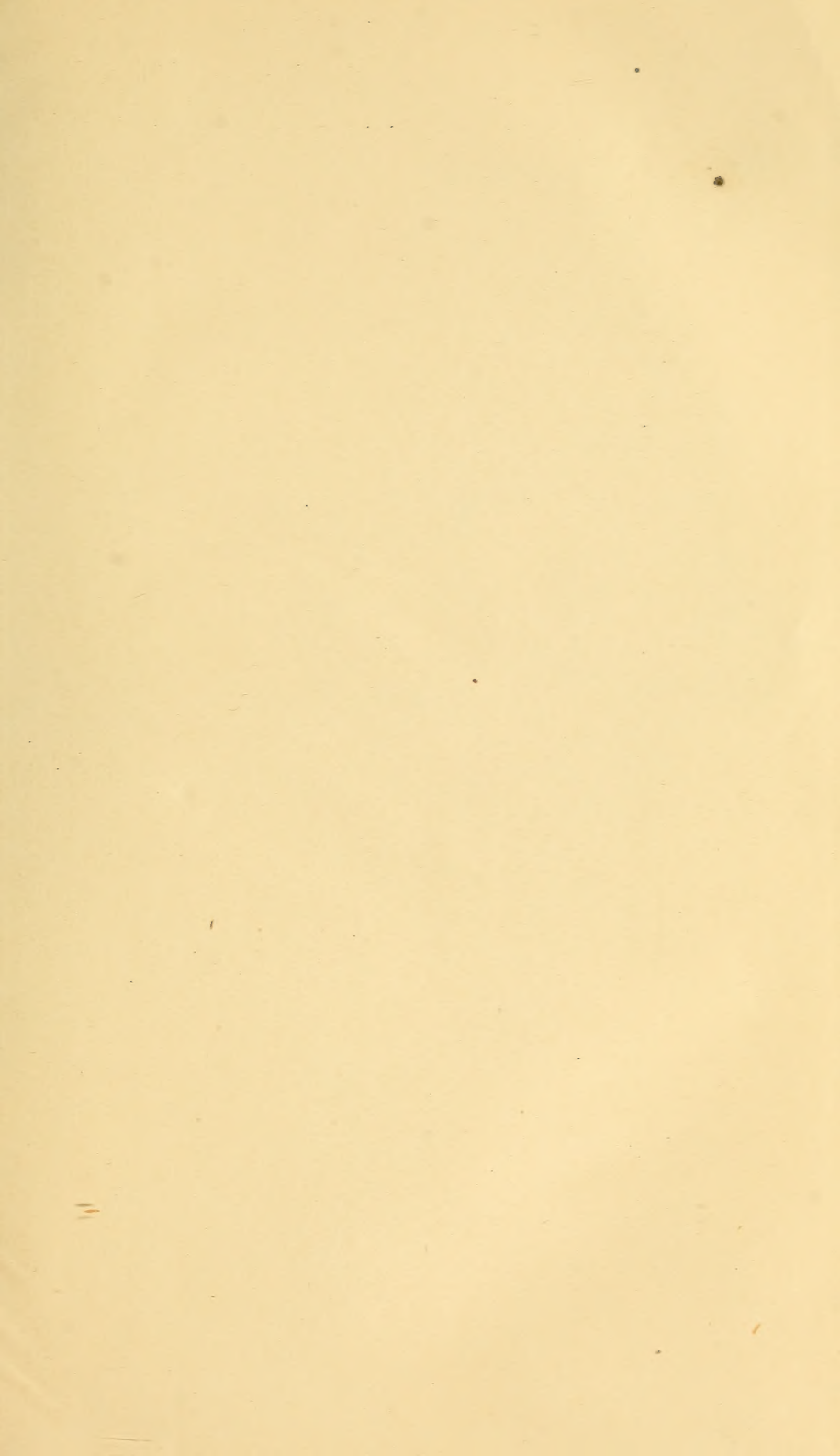
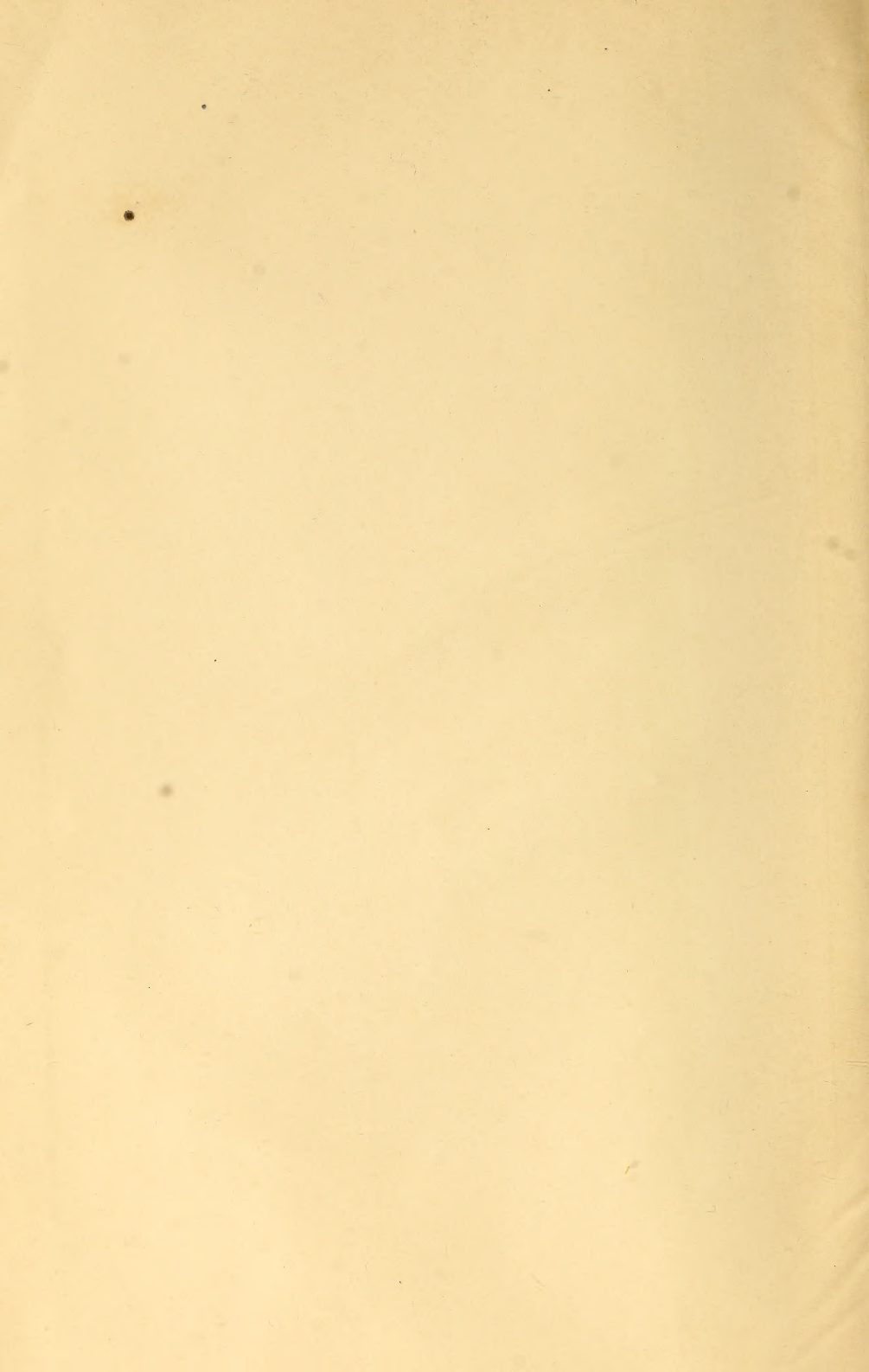




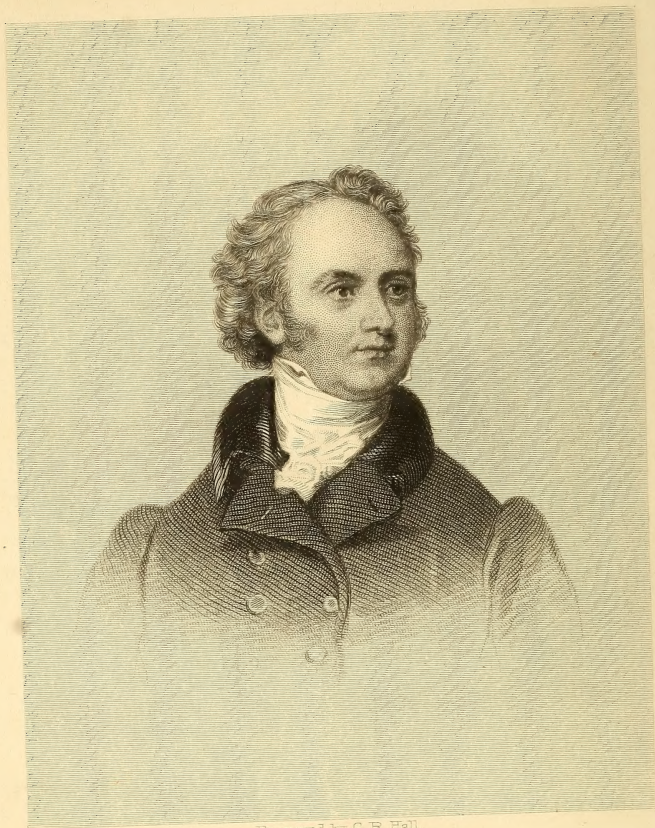
Class RC 81

Book J 28





362



Engraved by G. R. Hall.

Astley Paston Cooper

ASTLEY PASTON COOPER.

Portrait engraved in steel by G. R. Hall, 1818, by permission of the Trustees of the British Museum, from a portrait by Sir J. Stuart, 1818.

2736

THE AMERICAN HOUSEHOLD BOOK OF MEDICINE,

OR

EVERY ONE'S GUIDE IN SICKNESS:

CONTAINING

DIRECTIONS ON THE DISEASES OF MEN, WOMEN, AND CHILDREN;
ON BATHING, DIET, EXERCISE, AND NURSING THE SICK;
ON CLIMATE, MINERAL WATERS, &c., &c.;

WRITTEN IN PLAIN LANGUAGE, AND ADAPTED TO

POPULAR USE AND READY REFERENCE

BY MEANS OF A COMPLETE

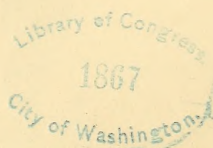
INDEX OF SYMPTOMS AND TREATMENT AND A
NATURAL CLASSIFICATION OF SUBJECTS.

BY JOHN JAMES, M. D., ETC., ETC.,

ASSISTED BY AN EMINENT WESTERN PHYSICIAN.

Illustrated.

(Imperfect: wanting pp. 33-48)



CINCINNATI:
R. W. CARROLL & CO., PUBLISHERS,
117 WEST FOURTH STREET.

1866.

RC 81
.528

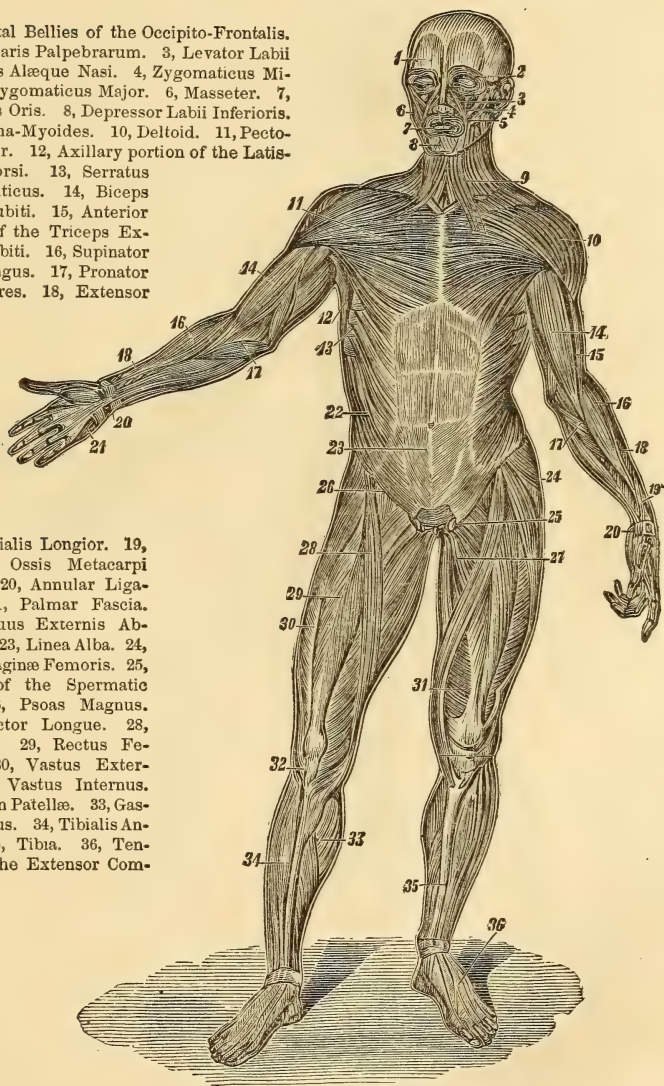
Entered according to Act of Congress, in the year 1866, by

R. W. CARROLL & CO.,

In the Clerk's Office of the District Court of the United States for the Southern
District of Ohio.

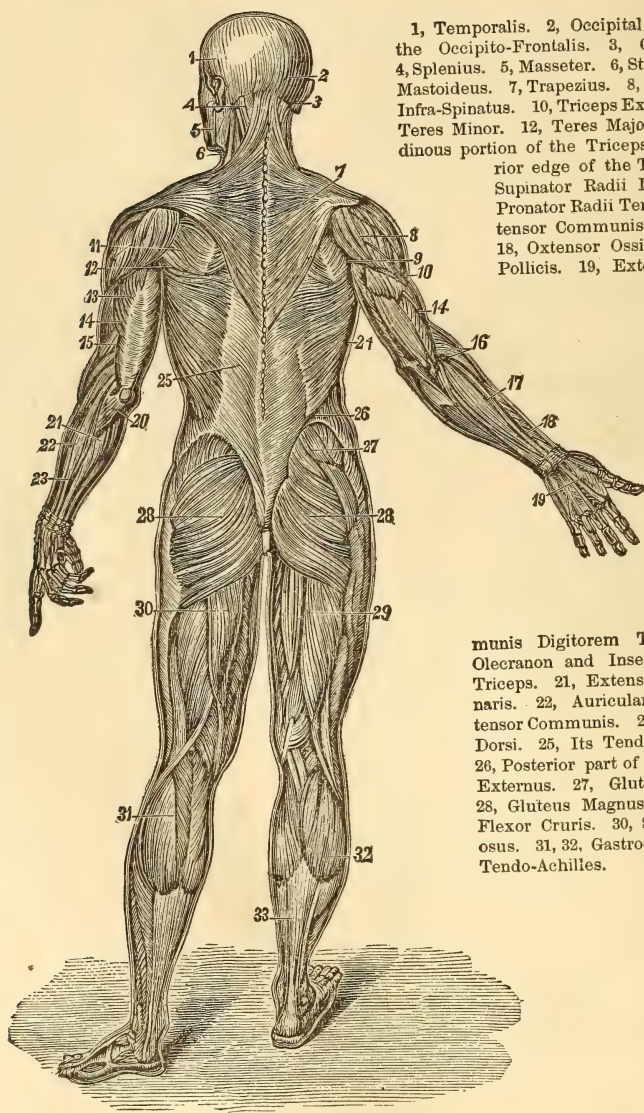
FRONT VIEW OF THE MUSCLES OF THE BODY.

1, Frontal Bellies of the Occipito-Frontalis. 2, Orbicularis Palpebrarum. 3, Levator Labii Superioris Alæque Nasi. 4, Zygomaticus Minor. 5, Zygomaticus Major. 6, Masseter. 7, Orbicularis Oris. 8, Depressor Labii Inferioris. 9, Platysma-Myoides. 10, Deltoid. 11, Pectoralis Major. 12, Axillary portion of the Latissimus Dorsi. 13, Serratus Major Anticus. 14, Biceps Flexor Cubiti. 15, Anterior portion of the Triceps Extensor Cubiti. 16, Supinator Radii Longus. 17, Pronator Radii Teres. 18, Extensor



Carpi Radialis Longior. 19, Extensor Ossis Metacarpi Pollicis. 20, Annular Ligament. 21, Palmar Fascia. 22, Obliquus Externus Abdominis. 23, Linea Alba. 24, Tensor Vaginæ Femoris. 25, Section of the Spermatie Cord. 26, Psoas Magnus. 27, Adductor Longue. 28, Sartorius. 29, Rectus Femoris. 30, Vastus Externus. 31, Vastus Internus. 32, Tendon Patellæ. 33, Gastrocnemius. 34, Tibialis Anticus. 35, Tibia. 36, Tendons of the Extensor Communis.

REAR VIEW OF THE MUSCLES OF THE BODY.



1, Temporalis. 2, Occipital portion of the Occipito-Frontalis. 3, Complexus. 4, Splenius. 5, Masseter. 6, Sterno-Cleido Mastoideus. 7, Trapezius. 8, Deltoid. 9, Infra-Spinatus. 10, Triceps Extensor. 11, Teres Minor. 12, Teres Major. 13, Tendinous portion of the Triceps. 14, Anterior edge of the Triceps. 15, Supinator Radii Longus. 16, Pronator Radii Teres. 17, Extensor Communis Digitorum. 18, Oxtensor Ossis Metacarpi Pollicis. 19, Extensor Com-

munis Digitem Tendons. 20, Olecranon and Insertion of the Triceps. 21, Extensor Carpi Ulnaris. 22, Auricularis. 23, Extensor Communis. 24, Latissimus Dorsi. 25, Its Tendinous Origin. 26, Posterior part of the Obliquus Externus. 27, Gluteus Medius. 28, Gluteus Magnus. 29, Biceps Flexor Cruris. 30, Semi-Tendinosus. 31, 32, Gastrocnemius. 33, Tendo-Achilles.

P R E F A C E .

IN offering this work to the public, we can not forbear a few remarks on its great importance to the health and happiness of the mass who are removed from easy access to physicians, and, therefore, exposed to disease, without any protection except such strength of constitution as a kind Providence may have given them. Frequently, no hardiness of constitution, unaided, can resist the attacks of disease, while delicate persons, with judicious management, may long survive their robust but careless or ignorant neighbors. In the absence of a medical attendant, it is of vital importance to have at hand such a work as this is believed to be, which gives, in a clear and popular style, the practical result of the experience and learning of preceding ages, as applied to the treatment of ordinary diseases, the management of the sick, and the prevention of "the ills which flesh is heir to."

It is not pretended that this work will or should supersede proper medical advice. On the contrary, it is merely an assistant to be relied upon in cases where but little is needed, or where a physician can not be procured. We leave to quacks and quack books such absurd professions and such injurious advice as lead people to trust in specifics, nostrums, and all manner of patent medicines, to the exclusion of treatment at the hands of scientific physicians of the regular school, and such medicines as long experience and patient investigation have proven to be useful in the prevention or cure of disease. This book rejects quackery in whatever guise

it may appear. It recognizes nothing but charlatanism in every effort to cast aside the results of science, as developed by ages of study, for the whimsicalities of so-called reformers, which spring fully armed from the heads of their authors, like the fabled Minerva from the head of Jupiter. Only inspiration can afford to ignore past experience, and this work is published in the belief that the age of miracles is gone.

Acting on this theory, we profess to offer but little that is new or original. We merely add a combined observation, covering half a century, to the result of the toil of a thousand years. We hope and believe that in doing this humble work we shall be in some measure assisting to stem the tide of quackery which, at times, seems to be on the point of overflowing the whole country, and washing away, with its foul isms, every landmark of science and every light-house of experience. We confidently appeal to physicians of the regular school throughout the country to examine the book carefully, and, if it be what we profess it is, to use their influence to secure its circulation among the people; and we have no hesitation in saying that they will be aiding in the propagation of valuable knowledge, in the preservation of human life, and in the eradication of quackery.

This work treats of nearly every phase of disease, and of sanitary matters in general. It begins with the prevention of disease, as being the most natural method of treating the subject of health. Under this head it treats of the noxious agents which produce disease, of atmospheric air, of the effect of the rays of the sun, of vitiated air, of respiration, of fire-places and ventilation, of endemic and epidemic influences, of malaria and the effects of miasms. It then proceeds to the consideration of mental affections, and, in this connection, of sleep and its effects. Next, it treats of exercise, with some directions as to the kind and quantity of it best adapted to the promotion of health. It then takes up the subject of the secretions, which are explained in a clear manner. Under this head the matter of baths and bathing

is fully discussed, showing wherein a proper use of water is a preventive of many ills of the body, and wherein we should beware of its excessive use to the exclusion of proper remedies, as is practiced by one class of quacks. This is followed by an article on food and diet, with a discussion of the matter of eating with reference to health.

Chapter II is devoted to an elaborate article on the Climatology of the United States, in which much interesting and useful information is imparted touching the healthfulness or unhealthfulness of nearly every portion of the country. To travelers, and those desiring to emigrate, this article must be of great value, as it condenses and popularizes a vast amount of knowledge on the subject. No person can safely venture to break up his home connections, to seek another dwelling-place for himself and family, without studying the climate of the country he desires to reside in, and it is very difficult to find this subject fully treated of in any accessible form.

Mineral waters are next taken up and discussed in a manner which must be useful to any one desiring to seek health by resorting to places of gayety, either in this country or Europe.

The reader will next find a chapter devoted to diseases in general, in which nearly every possible affection, not mentioned elsewhere, is treated of.

We next come to Diseases of Women, to which is devoted a long chapter, and one that is second to none in importance. The diseases which affect a female are frequently such as delicacy prevents her from disclosing, and the consequence often is that she goes on from year to year, and finally dies for want of proper treatment. Could she have had this work to consult, in all probability she would have discovered what affected her, and its remedies; or else would have seen the absolute necessity of procuring proper medical treatment, and might have been long spared to enjoy life herself, or to contribute to the happiness of her family and friends.

Next only in importance to this chapter on Diseases of Women is the one which follows it, on Diseases of Children. When we contemplate the fearful mortality among children, growing out of the ignorance of parents, the heart sickens. There is no reason why disease should be so fatal to children, except that parents have not at hand the proper books. Such a work as this, which designs to popularize science, is a *vade mecum* in every household, for the safety of young as well as old.

The work gives one chapter to Physiology and the Laws of Life, and another to Gymnastics and Physical Training, both interesting subjects. -

We can not permit this book to go to press without calling especial attention to the article on Cholera, in chapter IV. Now that this terrible disease is already among us, every one should be posted upon the subject. It is a disease which requires prompt, decided, and judicious treatment. No time can safely be lost, even in waiting for a physician. To be safely treated it must be taken in its incipient stages, before the dreadful rice-water discharges and the collapse set in. When these are present but little can be looked for, though careful and decided treatment may, even then, accomplish much. This article on Cholera is from the pen of a physician who has had most extensive and varied experience in the treatment of the disease. His practice extended through the epidemics of 1832-33, and 1849-50, and was very large.

A marked and exclusive feature of this work is its Guide to Diagnosis, or Index of Symptoms, by which the reader can find the treatment prescribed for his symptoms with perfect ease and certainty. It merely carries out the idea of an index to its proper conclusions; that is, making it so complete that any information to be had in the book can be got at without delay.

CONTENTS.

CHAPTER I.—PREVENTION OF DISEASE.

(Page 17-96.)

PREVENTION OF DISEASE.—Noxious agents—Conservative powers—Atmosphere and air as causes of disease—Calorific and colorific rays of the sun—Composition of air—Vitiation of air by the respiration—Arterial blood—Purification of blood—Quantity of oxygen and of air necessary to life—Components of animal matter—Too much carbon poisonous—Fire-places—Heated air—Contrivances for ventilation—The temperature of the air—Effects of high and low temperature of air—Humidity of atmosphere—Influence of light on animals—Atmospheric impurities, and their causes—Propositions for due ventilation—Electric variations—Endemic and epidemic influences—Malaria—Agues endemic—Effects of miasms: laws regulating their origin—Advice respecting malaria—Jeffrey's respirator.

MENTAL AFFECTIONS, AS CAUSES OF DISEASE.—Three conditions necessary for healthy brain—Effects of too much and too little exercise of the intellect—Education of children and young growing persons—Examples of over-study and of precocious intellect—Teaching at schools—Imaginative faculty to be less cultivated than it is.

ON SLEEP.—Quantity necessary; too much disposes to apoplexy; too little to exhaustion of powers—Bedrooms, what they should be.

EXERCISE.—Exercise essential; to be properly regulated—Effects of pressure of too tight corsets on muscles of the body—Wasp-waists condemned—Children chicken-breasted—Mothers should nurse their own children—Muscular exercise; its effects—Hours for exercise—Walking exercise preferable.

THE SECRETIONS.—Cruveilhier's index of health—Waste and supply—Secreting vessels—Absorbents—Mesenteric glands—Thoracic duct—The chyle—Atrophy—Effete or waste matters—Superabundance of carbon poisonous—Bile, its atomic composition—Purifying organs; quantity daily removed from the human body; how remedied—Ingesta and egesta, or incomings and outgoings—Bile, and its purposes—The chyme, when acid, when alkaline—Fat—Theory of Bernard—Uses of bile—Bilious disorders, their kinds, causes, and treatment—English cholera—Liver disease in tropical climates—The skin—Perspiratory pores described—Necessity of attention to the skin—Matters thrown off in perspiration—Fat, its use—The surface of body not to be chilled—Cold feet—Baths—Temperature of baths—The cold bath; the tepid and warm baths—Rules—A simple portable warm bath—The hot bath; the vapor bath; the shower bath, and mode of managing it; the hip bath; the foot bath—The nitromuriatic acid

bath in liver complaints—hot douche bath—Imitation of bath of Aix in Savoy—Uses of hot douche—Air-pump vapor bath—Shower bath—Cold bathing, and cold water drank; when dangerous—Advice to fashionable party-goers—Tepid baths—Warm baths—Hydropathy—Quackery—Perkins' metallic tractors—Homeopathy—Law of vicarious action—Baths of hydropathists: the sudorific, the shallow bath, the wet sheet, the sitz bath, douche, foot bath, wet spinal friction, etc.; wet sheet packing lauded; umschlags—Rationale of action by hydropathists—Hydropathy useful as an auxiliary—Opponents of doctors and drugs obliged to seek advice and help from doctors—Hydropathy not attainable by the poor man.

ON FOOD AND DIET.—Vital action, accompanied by waste of structures—Supply necessary—Two vital processes going on always—Nitrogenized and non-nitrogenous articles of food—Albumen, fibrine, and caseine—Nutrition of the animal tissues, through absorption of albumen, and its conversion into fibrine—Means to ends—Cookery of food—Salting, smoking, pickling—Sausages, etc., poisonous; why, not known—Boiling, its effects on meat—Roasting, broiling, baking, frying—Advice to dyspeptics.

TIMES OF EATING.—Breakfast, luncheon, dinner, tea, supper—Rules as to eating—Quantity of food—Vitellius' gluttony—Old age may be delayed in its oncoming, but can not be protracted—Annual consumption of meat of certain nations—Disorders of repletion, infesting middle life, fatal to many—Instances of death from indulgence; directions to such persons—Animal and vegetable food contrasted in certain respects—Vegetables—Soups—Fat of the body—Acidity of stomach, causes of—Unfermented bread—Moldy bread—Rich cakes, etc., bad; all pastry, some puddings—Butcher's meat, order of digestibility—Pork, venison, and game; birds, fish, potatoes, peas, beans, nuts, grapes, pears, oranges—Drink proper for indigestion and dyspeptics—Condiments condemned.

VEGETARIANS AND DRINKS.—Vegetable diet, exclusive use of, opposed—Such a diet is not the cause of peaceable dispositions—Carnivorous beasts of prey—A mixed diet proper for man—Cautions as to vegetarianism, especially to pregnant women—Drinks, alcoholic and others—Ales, porter—Wines of different countries; effects of time on them—Sugary wines—Acid in wines—Beer—Use of wines contrasted with spirit drinking—Wines proper for the dyspeptic, for the gouty—Port wine—Madeira—Champagne—Johannisberger—Schartzberger—Claret wines—Burgundy—Ardent spirits—Proof of alcohol—Brandy—Cordial mixture in typhus, etc.—Rum—Gin—Whisky—Arrack—Ratafias—Kirschwasers—Maraschino—Curacao—Effects of alcohol—When to be drank.

SPONTANEOUS COMBUSTION.—Improbability and impossibility of it in the human body.

COOKERY FOR THE SICK AND CONVALESCENT.—Boiling—Roasting—Baking—Frying—Cookery for the sick-room—Arrowroot—Mucilage—Tous les mois—Sago—Tapioca—Salep—Grit gruel—Oatmeal gruel—Iceland moss—Irish moss, or carrageen—Rice—Ground rice—Milk—Bread panada.

ANIMAL PREPARATIONS.—Hartshorn jelly—Beef tea—Chicken tea—Veal tea—Mutton tea—Turtle soup—Toast water—Apple tea—Lemon-peel water—Orgeat—Raspberry vinegar water—Lemonade—Simple barley water, compound ditto—Almond emulsion—Marsh-mallow tea—Linseed tea—Rennet whey—Vinegar and tamarind wheys—White wine whey—Mustard whey—Artificial goats' milk—Artificial asses' milk—Milk and soda-water—Buttermilk—Sago posset.

COOKERY FOR THE CONVALESCENT.—Boiled flour and milk—Arrowroot pud-

ding—Anon-root blanc-mange—Milk or beef tea arrowroot mucilage—Flummery or sowans—Oatmeal porridge—Rice and apples, or snowballs—Boiled bread pudding—Simple rice ditto—Macaroni or vermicelli ditto—Batter ditto—Tapioca ditto—Mashed carrots and turnips—Plain boiled vegetables.

ANIMAL PREPARATIONS.—Soup of rice, vermicelli, or macaroni—Chicken broth—Chicken panada—Rice gravy—Gloucester jelly—Sago milk—Mutton broth with vegetables—Tripe—Sweetbread—Fowl with rice—Water souchy—Broiled whiting—Aromatic barley wine—Mulled wine.

CHAPTER II.—CLIMATOLOGY OF UNITED STATES.

(Page 97-120.)

GREAT VARIETY OF CLIMATE IN UNITED STATES.—Range of thermometer—Influence of winds—Amount of rain and snow—Malaria—Influence of swamps, lagoons, marsh lands, alluviums—Great range of thermometer in States east of Rocky Mountains—Winter in Maine—Variations of thermometer greater near mountains, tropical variations, isothermal lines—Controlling circumstances—Oceans, seas, lakes, plains, plateaus, and great mountain ranges—Isothermal of 55°—Gradual elevations of plains—Isothermal lines in Rocky Mountains—Variations of isothermal on globe's surface—Range of thermometer greater on continents than on islands—Western coast, or "cold water coast," of North America—Variations of temperature on Pacific coast—Equable climate of Pacific coast—Influence of winds lost in crossing western coast range of mountains—Valleys of Sacramento and San Joaquin—Maize does not come to perfection on Pacific coast—September at San Francisco—Climate of Sierra Nevada Mountains—Mercury at Holton, Maine—At New Bedford, Mass.—At New York city—At Philadelphia—At Baltimore and Washington—At Charleston, S. C.—In Florida—At Cincinnati—At St. Louis—At St. Paul, Minn.—At Chicago—Great interior plains of North America—At South Pass—Extremes of cold—At Holton, Maine—At New Bedford, Mass.—At New York city—At Albany—At Philadelphia—At Washington, Baltimore, and Alexandria—At Charleston, S. C.—At New Orleans and Baton Rouge—At Cincinnati—At St. Louis—At Fort Snelling—At Fort Brown, Texas—At Fort Kearney—At Fort Alamo—Fall of rain—Snow—Influence of quantity of rain on climate, health, and disease—Warm countries with little or no rain—Ditto with much rain—Temperate climate with much rain—Fall of rain on eastern slope of Alleghanies—On western slope—Of lake region—West of line drawn from mouth of Rio del Norte to western shores of Lake Superior along Rocky Mountain range—Valley of great Colorado River—Great Salt Lake—West of Sierra Nevada range—Amount of rain during spring—During summer—In autumnal months—During winter.

SURFACE OF UNITED STATES.—Great interior valley of North America—Influence of surface on health and disease—Low districts of South Atlantic States—Autumnal fevers—Dry and elevated portions of the country—Ague and fever—Regions not subject to malarious diseases—Influence of winds—Heat—Storms, hurricanes, and tornadoes—Northers—Snow—Lake storms—Where invalids feel best—California as a resort for invalids in summer.

CHAPTER III.—MINERAL WATERS.

(Page 121-129.)

MINERAL WATERS.—Alkaline—Acidulous—Chalybeate—Aluminous chalybeate—Sulphurous—Saline—Purging saline—Lime or calcareous—Alkaline—Disorders they are respectively beneficial in.

CHAPTER IV.—ON DISEASES.

(Page 130-382.)

DISEASES.—Fever—Inflammatory—Mixed—Typhus—Bilious fevers—Remittent—Yellow fever.

INFLAMMATION.—Inflammation of brain—Ophthalmia—Inflamed tongue—Of tonsils—Mumps—Inflamed larynx—Croup—Catarrh—Bronchitis—Influenza—Inflamed lungs—Inflamed pleura—Inflamed stomach—Bowels—Peritonæum—Kidney—Liver—Chronic ditto—Bladder inflamed—Urethra ditto—Rheumatism—Chronic ditto—Gout—Dysentery—Erysipelas—Small-pox—Scarlet fever—Disinfecting clothes—Plague—Vesicular fever—Nettle rash—Shingles—Blood from nose—From stomach—From bladder and kidneys—Apoplexy—Palsy—Partial ditto—Indigestion—Vomiting—Flatulence—Water brash—Vapors—Epilepsy—Tetanus—Hiccup—Angina pectoris, or breast pang—Giddiness—Asthma—Hydrophobia—Colic—Iliac passion—Worms; parasite upon parasite, tape-worm, etc.—Guinea worm—Lead colic—Sea-sickness—Cholera—Diarrhea—Diabetes—Consumption—Spitting of blood—Windy swellings—Tympany—Dropsy.

SKIN DISEASES.—Chicken pox—Rose rash—Rupia—Tetter, or herpes—Humid scall—Chronic eczema—Miliary eruption—Impetigo—Ecthyma—Lichen—Prurigo—Leprosy—Dry tetter, or baker's or washerwoman's itch—Dandruff—Itch—Fish skin—Corns—Warts—Scurvy, land and sea—Itching, or pruritus—Grubs—Acne, or copper-nose—Baldness—Hair—Embrocation, etc.—Jaundice—Gallstones—Deaf and dumb—Canine appetite—Human rumination—Costiveness—Stricture of lower bowel—Gutta serena—Immoderate flow of urine—Strangury—Suppression of urine—Granular disease of kidney—Inflamed kidney—Gravel—Stone—Cancer—Derbyshire neck—Headache—Toothache, faceache, or tic d'oreux—Sprains—Scalds and burns—Cold, frost-bites, chilblains—Palpitation—Angina pectoris—Inflammation of pericardium—Water in ditto—Inflammation of heart—Diseased valves of ditto—Enlarged heart—Dilated ditto—The blue disease—Aneurism—Inflamed veins—Stricture of rectum—Fissure of ditto—Prolapse of ditto—Fistula in ano—Gonorrhea—Lues venerea—Enlarged prostate gland.

CHAPTER V.—DISEASES OF WOMEN.

(Page 383-466.)

DISEASES OF WOMEN.—Cancer of breast and womb—Falling down of bladder—Ditto of womb—Whites, or fluor albus—Menstruation—Too much, too little—Green sickness—Painful periods—Polypus of womb—Cauliflower excrescence of womb—Corroding ulcer of womb—Watery discharges from womb—Hydatids—

Spinal curvature—Cooper chair—Spinal irritation—Hysteria—Asafetida clyster—Cold douche—Sterility—Inflammation of womb—Chronic ditto—Irritable womb—Pregnancy—Longings—Costiveness, exercise, and bathing—The nipples and breasts—Signs of pregnancy—Prevention and relief of diseases in pregnancy—Heartburn—Costiveness—Diarrhea—Palpitations and fainting fits—Piles—Enlarged veins—Toothache—Salivation—Cramps—Violent movements of the child—Distended skin—The bladder—Whites—Pain in side—Headache—Miscarriage—Calculation as to labor—Sore nipples after delivery—Excessive flow of milk—Milk abscess—After pains—Weaning—Drying up of milk—Inflammation of peritonæum—Puerperal fever—Intestinal irritation—False inflammation of abdomen—Milk fever.

CHAPTER VI.—DISEASES OF CHILDREN.

(Page 467-554.)

DISEASES OF CHILDREN.—General observations—Doses of medicines—Effects of some medicines on children, and formula—Teething—Scrofula in the neck—Treatment of childhood—Iodine baths—Scrofulous ear—Rickets—Atrophy—Disease of brain and convulsions—Distinction between water in the head and worm fever—Alarming symptoms—The fontanelles—Chronic water in the head—The thrush, or inflamed mouth—Diphtheria—Canker of mouth—Mercurial mouth—Infantile indigestion—Cholera infantum—Diarrhea—Prolapse of lower bowel—Croup—Measles—Cow-pox and vaccination—Ringworm—Still-born children—Deformities—Tongue-tied—Harelip—Blue disease—Trismus—Erysipelas—Abscesses—Induration of cellular tissue—Jaundice, or yellow gum—Purulent ophthalmia—Red gum—Swelling of breast—Whooping-cough—Sets of teeth.

CHAPTER VII.—POISONS, ACCIDENTS, FORMS OF MEDICINES, AND ADVICE TO EMIGRANTS.

(Page 555-610.)

POISONING BY STRONG ACIDS.—By strong alkalies—By antimony—By iodine—Arsenic—Mercury—Copper—Tin—Zinc—Silver—Nitre—Liver of sulphur—Baryta—Phosphorus—Cantharides—Glass—Lead—Acrid plants—Narcotic poisons—Prussic acid—Mushrooms—Nux vomica—Hemlock, etc.—Alcohol—Putrefying poisons, as putrid meat, serpents, etc.—Accidents—Death from charcoal vapor—Fever caused by it—Coal gas, or carbureted hydrogen—Sulphureted hydrogen—Drowning—Strangling or hanging—Substances falling into the air-pipe—Lightning stroke—Intense cold—Apparent death in new-born infants—Substances, etc., in the eyes—Ditto in the ears—Burns and scalds—Sprains—Bruises or contusions—Cuts and wounds—Dislocations—Ruptures—Fainting fits—Lotions—Liniments—Ointments—Mustard poultice—Croton oil—Blisters—Poultices—Aneurisms—Fomentations—Stupes—Antacids—Worm medicines—Laxatives and cathartics—Emetics—Cordials, stimulants, and tonics—Diluents—Diuretics—Diaphoretics and sudorifics—Alteratives—Narcotics and anodynes—Antispasmodics—Astringents—Directions and advice to emigrants—Climates for emigrants—Delirium tremens, or drunkard's mania—Medicines to be taken.

CHAPTER VIII.—SPECIFIC DISEASES.

(Page 611-626.)

MILK SICKNESS, OR SICK STOMACH.—Dr. Drake's views—Observations on the nature of the disease—Its origin—Where prevalent—At what seasons—Views of Prof. Dickson as to treatment—Chronic cases and their treatment—Phlegmasia dolens, or milk leg—Causes—Symptoms—Cure—Ulcers about the nails—Felon, or whitlow—Different varieties of *trichina spiralis*—History—Description—Symptoms—Treatment—Accounts of cases.

CHAPTER IX.—HOW TO NURSE THE SICK.

(Page 627-653.)

ELEMENTS OF GOOD NURSING LITTLE UNDERSTOOD.—Importance of pure air for the sick—Ventilation—Pure water—Efficient drainage—Cleanliness—Light—Effects of noises—Reading to the sick—Effect of beautiful objects on the sick—Food for the sick—Manner of preparing—When to give—How much to give—Changing the food—Importance of punctuality in administering food—Nutritive power of different articles of food for the sick—Beds and bedding—Careful observance of the varying conditions of the sick.

CHAPTER X.—PHYSICAL TRAINING AND GYMNASTICS.

(Page 654-704.)

THE OBJECT OF EXERCISE.—Strengthening of muscles—Beauty of form—Promotion of health—Effect on the brain and nervous system—The due blending of out-door exercise and intellectual pursuits—General directions—Best time for exercises—Best place for ditto—Clothing to be worn—Exercise to begin gently—To avoid being cooled too quickly—Not to exercise to excess—The necessary fitting up—The belt—Training—Directions for—Results of—Position—Of the head—Of the body—The limbs—Extension motions—Locomotive exercises—The Indian club exercise—The balance step—Without gaining ground—Gaining ground by the word forward—Walking—Utility of walking—Moderate walking—General mechanism of walking—Slow walk, or march—Moderate and quick pace—Feats of walkers—Running—Position in running—Action in running—Respiration—Moderate running—Rapid running—Feats in running—Leaping—High leap, without a run—High leap, with a run—Feats in high leaping—Long leaping—Feats in long leaping—Vaulting—Oblique vaulting—Climbing—On the ladder—Inclined board—Upright pole—Mast—Slant pole—Horizontal bar—Leaping with a pole—The rope ladder—Upright rope—Oblique rope—Level rope—Climbing trees.

CHAPTER XI.—PHYSIOLOGY AND LAWS OF LIFE.

(Page 705-757.)

ON LIFE.—Division of organized beings into animals and vegetables—Of the forms peculiar to the organic elements of the animal body, and of the principal combinations of the chemical elements—Of the forces which act in the animal

body—Summary idea of the functions and organs of the bodies of animals, and of their various degrees of complication—Of the intellectual functions of animals—Of food and the digestive process—Sources for the demand of aliment—Hunger and thirst—Nature and destination of the food of animals—Of the passage of food along the alimentary canal—Action of the intestinal tube—Nature of chymification and chyification.

GLOSSARY OF MEDICAL AND SCIENTIFIC TERMS.....	759
GUIDE TO DIAGNOSIS.....	771
TABLES OF WEIGHTS AND MEASURES.....	793
INDEX.....	795



THE AMERICAN HOUSEHOLD BOOK OF MEDICINE.

CHAPTER I.

ON PREVENTION OF DISEASE BY DIET, EXERCISE, BATHS, ETC.

THERE is no place which man has made his abode, where noxious agents which act injuriously on his body have not been present; and these noxious agents invariably disturb the actions of its economy, and tend ultimately to destroy life. But, fortunately, certain inherent conservative powers exist, which resist the influence of these causes of mortality.

The actual mortality at all times will, therefore, bear a proportion, regulated by the relative strength of these destructive agents and the relative weakness of these conservative powers. There are, also, states which tend to enfeeble these resisting or conservative powers—such as the states of parturition, infancy, sickness, or those produced by errors in the modes of life—and during the prevalence of these states, life may be destroyed by causes which would not prove fatal to life under more healthy conditions of the system. Were the condition of the body always that of health, and the mental state one of enjoyment, the duration of life would probably be extended to its utmost limits; but this duration is abridged by whatever tends to disturb or overthrow the functions of the body, wherefore an improvement of an invalid state, or the maintenance of a healthy condition, must not only tend to lengthen life, but materially conduce to absolute

enjoyment; and thus the prevention of disease becomes of the utmost importance to every one.

Impressed with these truths, the writer wishes, by a few practical observations, to point out the means whereby we may avoid many serious errors which are committed during the several stages of human life—errors partly caused by the habits which civilization has formed, partly by ignorance or thoughtlessness.

It will not prove unprofitable, therefore, if we advert to these causes of disease, which operate often by slow degrees and imperceptibly, and yet which are endowed with great power. And, first, of the air we breathe.

THE AIR

we breathe—the atmosphere—ought to be considered with regard to its purity, its temperature, its pressure or hygrometric state, and its electric condition, as regards the induction of disease.

Atmospheric air, as far as its chemical components are concerned, is the same every-where; yet it can hold suspended, or in solution, many invisible as well as visible effluvia, such as various gases, unhealthy miasms, and odors. The calorific and colorific rays of the sun penetrate it, and are again reflected from the surface of the earth; partial rarefaction takes place, and the seasons influence it.

The atmospheric air is composed of oxygen and nitrogen, with a very small proportion of carbonic acid gas. Before inspiration, it consists of 23 parts of oxygen and 77 of nitrogen, and after expiration, $3\frac{1}{2}$ per cent. of carbonic acid, or, on an average, $27\frac{1}{2}$ cubic inches of carbonic acid are evolved from the lungs every minute, or about 40,000 cubic inches in 24 hours, weighing nearly 3 pounds, and containing about 11 ounces of carbon. The difference between the air before and that after respiration, arises from the action of the lungs or respiratory organs upon it, by which the oxygen in the respired air is instrumental in removing from the blood a great portion of the carbon, and in changing the venous or dark bluish-red blood of the veins into the bright red arterial blood.

This arterial blood is destined to maintain in a healthy state all the organs and parts of the body, so that, by the action of certain organs, certain secretions may be elicited from it to its own purification; and when the arterial blood has effected these ob-

jects, it is again returned by the veins to the heart and lungs, there to be acted on by the atmospheric oxygen. How important, then, it becomes that pure air should be supplied in sufficient quantity.

A man requires the supply of one-sixth of a cubical foot of oxygen from the atmospheric air per minute; but, because of the mixture of his breath (expired air) with the air around him, he requires, to be safe, the ventilation-supply of two or three cubical feet per minute, since it appears that, at each respiration, 16 cubic inches of air are on an average deteriorated, and from 15 to 20 such respirations are taken in a minute, consequently from 300 to 320 cubic inches of air are each minute poisoned (as far as the animal race is concerned) by each individual, and rendered unfit for the support of human life.

The ultimate elements of animal matter consist of four gaseous bodies—carbon, hydrogen, oxygen, and nitrogen—and by the varied union or intermixture of these bodies the proximate animal compounds are formed. Into the composition of these latter carbon largely enters, the fibrine alone, of which muscles are formed, containing more than 53 per cent. of carbon; thus a good deal is required. Yet this quantity once attained, nature seems to bear with any superfluity very badly; so much so that, if carbon exist in the arterial blood beyond its normal healthy proportion, it acts like a deadly poison, ultimately, and sometimes immediately, suspending the functions of the brain, and then the action of the lungs.

Wherefore, to avoid unnecessary accumulation of carbon, every one should look to the thorough ventilation of his rooms, both for sitting and sleeping in. Windows are the best ventilators; therefore they should be always used as such, both in summer and winter; and they should be so arranged that currents of air would prevent stagnation in any part of rooms or houses.

In addition to this, the heated air, which has been vitiated by respiration, and which rises to the upper parts of the room, there remaining floating about and gradually descending lower and lower as the process of vitiation goes on, may be removed continually as it forms, by means of an aperture or two made in the upper part of the room above the fire-place, and leading into the chimney flue. These apertures could easily be concealed by a simple ornament, which almost any bricklayer could manufacture. Each

opening should be covered by one of those self-acting and constantly-turning ventilators, which are to be got in many places in our cities and elsewhere.

Contrivances to secure a plentiful admission of fresh air are also on sale—through the upper panes of the windows, whereby a rushing descent of cold air is prevented, and the invalid further secured.

If these three points were attended to—and this can be done at but little expense—many a cold, many a bronchitis, and much suffering from disease would infallibly be prevented.

As to the dwellings of the poorer classes, the writer is delighted to find that the attention of a humane public has been directed to the means of preventing that dreadful packing together of human beings in one small room, which has caused so many cases of typhus and other dangerous diseases, and has kept up foci of infection dangerous to all who reside in their neighborhood.

To secure proper ventilation, we ought to effect the introduction into the room of four feet, or of from two to three cubical feet per minute for each individual in it; and this must be done without allowing a stream of cold air to affect the body partially, more particularly during sleep, when the skin is especially sensible of frigorific impressions.

The temperature of the air in rooms should not exceed 58° of Fahrenheit, or, in some invalid cases, 60°; but the cooler it is the better, so long as no chilling effect is felt. If the external temperature be lower than that of the body, the caloric of that body is carried off, and is speedily replaced in a healthy individual, by an evolution of heat from within, aided by clothing, coverings, and exercise. When the external temperature approaches the standard heat of the body (about 98°), sweat soon breaks forth, and the superfluous heat is carried off by perspiration. An external temperature of 98° is rather oppressive. But the terms hot, warm, and cold are merely relative to our sensations; and if the heat is carried off as fast as it is generated, and no faster, no particular sensations are felt. Now this equilibrium is maintained (supposing no extraordinary exertions are made) when the thermometer stands at 62° Fahrenheit, or thereabouts. That point in the scale may be called temperate; all degrees above that point up to 70° are reckoned warm; and all above 70°, hot. A

temperature descending between 60° and 50° is considered cool, and every lower degree is cold.

Too high a temperature causes a relaxation, from which the weak and delicate must suffer, so that such persons should avoid exercise in summer while the sun is powerful; and even the healthy and robust ought to be cautious in this respect in sultry summer weather. The siesta of the Portuguese and Spaniard is not a mere luxurious habit; it is essential to health. The cold of winter is more healthy than the heat of summer, provided we are well clothed, can afford fires, and are strong enough to take sufficient exercise. Some of Captain Parry's officers, when near the North Pole, walked daily upon the ice when the thermometer was 20° below zero; that is, 50° below freezing.

The air, in respect of humidity, may bring on a tendency to disease. Air too humid relaxes and depresses the nervous system, and too dry air is equally hurtful; but cold moist air is more injurious than cold dry air; hence night air is generally injurious to invalids. Warm moist air may favor dysentery, cholera, and fevers.

When the indication of the hygrometer does not exceed 15° , we are directed by our feelings to call it damp; from 30° to 40° , we begin to reckon it dry; from 50° to 60° , very dry; and from 70° upward, intensely dry. A room is not comfortable, or perhaps wholesome, if it has less than 30° of dryness; but the atmosphere of a warm occupied apartment will commonly produce an effect of upward of 50° . If an invalid requires a high temperature in his rooms, he should have evaporating dishes placed in them, to secure a healthy proportion of humidity. But sudden variations are very dangerous, and do much mischief.

The influence of light and of the sun's rays is very conducive to health, and to the growth of children. We see this influence displayed in the development of certain lower animals. If we inclose tadpoles of both frogs and toads in different boxes, some of which shall admit light, others exclude it, and place these boxes in running water, we shall find that the tadpoles exposed to the light will have undergone the change to the perfect form of the animal; while those excluded from the light, though they may seem perfectly vigorous, will not have undergone the transformation, even though they may have increased to double or triple their primitive weight. In all those climates where the heat

renders desirable a state almost approaching to nudity, we shall find the development of the frame is early, and the form has fewer deviations from the symmetry natural to the race than among the northern nations. Deformity is comparatively rare in hot climates, where the surface of the body is much exposed to light. The muscular and rounded forms of the Mexicans, Peruvians, the Chaymas of South America, and of the natives in other warm climates, are the proofs that light and heat are favorable to a healthy development. Heated air must, however, be avoided by the invalid, though light should be admitted as much as can be borne. Heat expands air, and then it occupies a larger space in proportion to its weight; consequently, at each inspiration, less air is really breathed, less oxygen obtains access to the blood, and the blood is not so well aerated as it ought to be. Accordingly, we find persons respiring such an atmosphere soon feel faint; and in crowded assemblies, or rooms not sufficiently ventilated, people are often carried out in a fainting state, partly from this cause, and partly from the carbonic acid gas floating diffused in such an atmosphere; hence, too, many persons suffer from headaches after attending lectures, etc., in ill-ventilated rooms.

To give an idea of the air as a cause of disease, some facts may be mentioned which were adduced in 1847, in a very interesting lecture, by Mr. Toynbee, of England, on ventilation.

He said disease from atmospheric impurities seemed to be the rule, and health the exception. One-fourth of the children born in England died before their fifth year; and out of 49,089 deaths in 1846, 14,368 died from diseases of the respiratory organs, impure air being the great source of these diseases; and out of this number 49,089 people who died in 1846, 22,275 died before their fifteenth year, and only 2,241 attained old age. These statistics are selected merely as a specimen. Like results will uniformly follow similar conditions, and probably but little improvement has taken place since the above facts were published to the world, though progress in the right direction is being made.

The air should be always in motion; stagnant air becomes impure, like water. Air always contains much animal and vegetable matter, in the form of ova (eggs) of infusoria, and the seeds of the lower vegetable organisms.

But the act of respiration is a great cause of the deterioration

of air. The air in the lungs is exposed to 170 millions of cells, having a surface equal to thirty times that of the body. The air ejected after respiration is poisonous.

A second cause of deterioration is the combustion of lamps, gas-lights, candles, etc. A single candle is nearly as injurious to the air as a human being, and two fourteen-holed Argand lamps consume as much air as eleven human beings.

A third source of impurity is the vapor, loaded with animal matter, given off from the lungs and skin. Each of these parts pours out an ounce of fluid every hour; so that in a church containing 500 people, twelve gallons of noxious fluid are given off in two hours.

The fourth source is the large quantity of decomposing animal and vegetable matter, and the effluvia arising; added to this is the difficulty of dispersing such effluvia by the wind, in consequence of the crowded houses, close streets, etc. Dr. Mantell found that various classes of infusoria, which he could keep alive at Clapham, would not live in London air. And few plants will live in London.

Fever, consumption, scrofula, deafness, and common cold are traceable to imperfect ventilation.

One hundred and twenty thousand people, in England and Wales, are slowly dying of phthisis (consumption).

The propositions submitted to the English government for ventilation were, that no living, sleeping, or work-room should be less than eight feet high, and should contain 144 superficial feet.

2. That such room should have at least one window, opening at its top, and also an open fire-place.

3. That Arnott's valve should be opened into the chimney at top of every such room; no smell need be feared. In St. George's and St. James's Dispensary there was a diminution of nearly 800 applicants, owing to improved ventilation, and this improvement was owing to the exertions sustained by the Samaritan Fund, attached to the dispensary, to secure ventilation of the abodes of the poor in the district.

4. Every room must have the means of admitting fresh air, and all products of combustion should be carried off as they are formed.

5. All churches, schools, theaters, lecture-rooms, work-shops, work-houses, etc., should be made to adopt approved and efficient

means of ventilation, under the superintendence of an officer of health. Much more attention has been paid to these matters in Europe than in the United States, partially from the greater necessity, growing out of the more crowded condition of towns and cities, but particularly because science has been more carefully cultivated.

As to the atmospheric electrical variations, it is not easy to guard against them; they influence the nervous system rather than the vascular, and cause depression of spirits in the absence of misfortune, anxiety, or any thing likely to produce such a state of feeling. The best way to repel such injurious influences is to invigorate the body by every possible means; by exercise, proper diet, and clothing. The author thinks he has observed that wearing silk about the body, as, for example, a silk waistcoat, has done some good, and he found that some patients of his escaped pains in their knees, which looked like those of rheumatism, but which either came on, or were always much increased, during certain electric atmospherical changes, by wearing silk pocket-handkerchiefs round their knees, or by enveloping them in silk.

The air is the medium of conveyance for endemic and epidemic influences.

The term malaria may be applied to certain emanations from the earth, and should possibly be restricted to those vapors or miasms which induce endemic diseases, or those arising from local influences; still the origin of epidemical influences may be the same as that of endemic, only that the epidemic is borne on the wind coming from distant quarters; still, whether distinct or not, there is no doubt that, though the Asiatic cholera is an epidemic disease, yet the liability to its visitation is evidently connected with local circumstances, which either assist in developing the activity of its mysterious germs, or, at all events, exert an attractive influence over them.

Endemic means in or among a people, applying to diseases peculiar to a certain class of persons or country. Thus, ague is endemic in marshy places, and scurvy to sea-faring people. Epidemic means upon the people, as if an atmosphere descended and involved a large number at once. It applies to diseases, contagious or otherwise, which attack many people at the same season and in the same place. Thus, putrid fevers, plague, dysentery, Asiatic cholera, influenza, etc., are epidemic. Asiatic

cholera is produced by an animal poison, and does not fall upon a whole people at once, but begins in particular parts of towns or cities, and in sparse populations dies out by attacking a few persons, leaving those not connected with them unaffected.

The malaria is a specific poison, and it produces specific effects upon the human body. It is not simply bad air or impure air; it is a widely-spread poison, and the mildest form of fever it gives rise to is ague. In hot climates it occasions remittent, and even continued fevers, often of bad type or character. These gaseous emanations proceed from the earth's surface; they are aëriform, or are conveyed in the atmosphere, though they are imperceptible to our senses, nor do we know any thing of their chemical or physical qualities.

Malaria requires a certain temperature for its production. It is seldom traceable beyond the 56th degree of north latitude, and 60 degrees of Fahrenheit is the temperature said to be requisite for it to exist. The nearer we approach the equator the more virulent are the effects; but while in England it gives rise to intermittents (agues), in Spain and the Mediterranean remittent fevers, as well as agues, arise from it, and in the West Indies continued fevers. To this degree of temperature a certain degree of humidity must, however, be added.

Agues are accordingly endemic in Holland; and in Italy, the Pontine Marshes, and the district called the Maremma are celebrated for the ravages committed by it; so that a portion of country stretching for thirty leagues along the shores of the Mediterranean, and ten or twelve leagues broad, is rendered dangerous and almost uninhabitable by it. America and newly settled countries are obnoxious to it. In India it is pestiferous to man and beast; and in May, after the rains have ceased in certain districts, and the extreme heat comes on, the very monkeys and tigers go up to the hills, and do not return till October. The decomposition of vegetable or animal remains, or of both, has been assigned as the originator of this poison; but this is not so. The putrefying animal and vegetable remains may co-exist with, but do not originate the poison. These emanations proceed from parts of the earth's surface that have been flooded and then dried. The higher the temperature, and the quicker the drying process, the more virulent the poison. When parts previously dangerous are entirely flooded over, the danger ceases.

In the West Indies, on the higher grounds, agues occur; lower down, remittents, while in the lowest and hottest parts continued fevers arise.

Strangers are more readily affected than those habituated, but the black-skinned negro is always exempt from all attacks. All malarious districts are more dangerous at night, and to sleep at night in the open air in such districts would be to invite an attack; neither should the morning air be breathed too soon in such places.

The malaria loves the ground, and combines or becomes entangled with fogs; therefore persons should sleep in the highest rooms, for the poison does not rise high in the atmosphere. London fogs never rise more than 240 feet above the level of the sea at low water, and as the Norwood hills are 390 feet above the same level, the air on those hills is likely to be pure and invigorating. It is carried by the wind like a heavy fog or vapor, and these points should all be attended to by the traveler through malarious districts, or by those who settle in hot climates. Another singularity of malaria is, that the vapors lose their noxious properties by passing over even a small surface of water. Perhaps they are absorbed by it. And many a sailor might escape an attack of fever by sleeping on board his ship instead of staying on shore. Malaria is attracted by, and adheres to, the foliage of lofty trees, so that it would be very dangerous to sleep under them; yet this peculiarity proves a protection to many who live to leeward of an interposing screen or belt of trees. In Guiana, where large trees abound, the settlers live, fearlessly and unhurt, close to the most pestiferous marshes, so long as they are thus protected by trees.

Lastly, numerous facts have proved that cultivation of the soil, draining, etc., have prevented the generation of malaria.

Persons should leave such dangerous localities, if they can, and travelers should stay as short a time in them as possible; but if necessary to take the risk of such influences, they should live as well as they can in moderation, and take a daily preventive dose of quinine during the seasons of danger. No precaution should be neglected to prevent an attack from malaria, since repeated fevers of this kind produce ultimately the most serious and dangerous consequences. As to epidemics, all that can be done in prevention is, to take care that all offensive materials shall be

removed from our dwellings and homesteads; that drains and sewers shall be in constant, efficient, and full operation; that cleanliness be observed, and as plentiful a supply of pure air obtained as possible.

Unhealthy miasms creep up the sewers, ascend sinks in kitchens and water-closets, all which should be kept closed by self-acting valves, and the sinks well corked or stopped; for in this way both rich and poor are endangered, and may suffer; and the epidemic influence meeting with the miasms, seems to be immediately endowed with most deleterious power.*

THE MENTAL AFFECTIONS AS CAUSES OF DISEASE.

The influence of mental impressions on the circulation of the body are illustrated by the act of blushing, by the instantaneous pallor of fear, or by the swelling red face of anger and the quickened breathing of surprise and joy. The sighing and pain in the chest which follow sorrow and other depressing emotions, display the power of the mind over the respiratory functions; palpitations, tremors, faltering speech, and increase of muscular power, which are caused by the various emotions, give us evidence of the power possessed by the mind over our muscles; and the tears which flow from sympathy show us its influence over the glands, while the secretions are affected also in a very extreme degree.

The first condition of a healthy action of the brain is a sound original constitution; the second is a due supply of properly oxygenated blood; and the third is the regular exercise of its functions. If the brain be not sound originally, there is only the greater occasion for care, inasmuch as less will be sufficient to excite derangement of function in a brain so constituted than in one of sound congenital structure.

The second condition is essential; for if the arterial blood within the cranium (skull) be not sufficiently oxygenated (pure), the mental functions will become impaired or altogether cease; and if it be over-oxygenated, it will be too much stimulated. Living in an impure air, breathing or living in ill-ventilated places, or total want or deficiency of nourishing food, will, in course of time, affect the blood in this way of under-oxygenation, pro-

* See the chapter on the Climatology of the United States, and also that on Intermitting and Remitting Fevers, for further information on these subjects.

ducing languor, headache, hysteric, and other nervous symptoms. On the other hand, a diet too nourishing or abundant will, also, like too poor and scanty a diet, affect the blood through the stomach, and, by preventing the proper assimilation of the food, cause the transmission to the brain of blood not sufficiently stimulating.

The third condition is the most important of all, for the brain must be duly exercised, but not overtasked; and yet how often is this overtasking met with in the present day! The brain obeys the same laws as other organs of the body, so far as its peculiar exercise is concerned. If it is allowed to be inactive, the intellectual functions will suffer in proportion to the inactivity, and act slowly and feebly. After a time, it reacts upon the body, and may induce indigestion, hypochondriasis, hysteria, and other nervous symptoms. The "*dolce far niente*" existence of the Southron is well known; but, as applied to mind or body, no more pernicious mode of life than such a one can be adopted, destructive equally and alike of both mind and body. It may at first be pleasant, but its consequences are destructive. Let every one resist the first temptation from this insidious foe as he would avoid an overwhelming torrent.

But here, in America, we are more in danger of overtasking the brain than of the reverse; and, to begin with children, there is no doubt that too much intellectual exertion is demanded from them. In the earlier years of life, nature is busily at work to build up, in strength and soundness, the various organs of the human body, leaving intellect to the last, as the Corinthian capital to life's column.

We should content ourselves with allowing the senses and perceptive powers of children to acquire information, and their intellect will thus educate itself. By so doing we do not interfere with the processes concerned in the growth of the body; but if we go beyond this, and exact from the immature brain what ought only to be expected from the maturer one, we shall certainly be originators and witnesses of a breakdown, which will be doubly melancholy if there have been previous promises of intellectual brilliancy.

For too rapid development of the brain entails premature dissolution; and premature mental attainments are frequently as destructive of life as a too rapid growth of the body. Philip

Barettier was an instance of this. He was born in January, 1724. French was his mother-tongue, with some words of High Dutch; but in consequence of his father talking Latin to him, it became as familiar to him as his native idiom; so that, without knowing the rules of grammar, he, at four years of age, talked French to his mother, Latin to his father, and High Dutch to the maid or neighboring children, and without mixing or confounding the respective languages. In his fifth year he acquired Greek in like manner. Before he was six years of age he entered on Hebrew; at nine, he composed a dictionary of Hebrew words, with philological observations. With these he intermixed the study of the Chaldaic, Syriac, and Arabic; and, having in his possession a pair of globes just at this time, in eight or ten days he was able to solve all the problems on them. He afterward studied medals, inscriptions, antiquities, metaphysics, and experimental philosophy. This blazing meteor of genius died in October, 1740, aged only 19 years, 8 months, and 10 days. The vulgar saying, "He's too clever to live," is founded upon observation.

In other cases these early specimens of superior intellect are sometimes followed by a state of imbecility. Antiochus tells us that Hermogenes, who was a celebrated rhetorician at 14 years of age, was ignorant in the extreme at the age of 24.

Overstudy produces its victims continually, and we read of Cicero being dyspeptic, of Pliny's life being rendered miserable by heartburn, of Bayle dying a martyr to excessive application, and of Sir Isaac Newton falling into a deep melancholy for a long time, which deprived him of the power of thinking. Great students generally have extreme susceptibility of nerves and much irritability of temper, and their digestive powers are not only much impaired, but often nearly altogether overturned.

Such men are unintentional suicides, and little good can be expected from remonstrances; but in the case of children, we have their management in our own hands, and much beneficial training of their minds can be effected by directing their opening powers of observation, by teaching them to discriminate accurately, and by pleasantly and in the way of amusement leading them on from the knowledge of effects to that of causes. Children will thus readily and rapidly acquire information, who, if they had been pinned down to learn, and, parrot-like, to repeat

abstract propositions of grammar, etc., would appear the veriest dunces that ever disappointed a parent's hopes.

The author alludes here to young children only, for a time will arrive when a sugar-plum system of education must be abandoned, and the business of education entered on in a serious and rational manner, alone worthy of its vast importance.

We read of the celebrated philosophe-moraliste, Michel de Montaigne, who imparted to the French language an energy which it did not possess before, that he acquired a knowledge of the Latin by having a person to reside with him who spoke nothing else; and Montaigne, in this easy way, learned to speak it as a vernacular tongue, with tolerable fluency and freedom, at the age of six. Greek was also taught him as a sort of diversion. By means equally gentle and attractive, he was insensibly led to acquire some knowledge of science, and without forcing his inclination or imposing the necessity of application, his habits were formed, and his powers agreeably exercised.

Many other persons could be enumerated who have, as children, even drank somewhat deep at the fountain of learning, while it seemed as if they were only slaking a thirst for amusement.

The system of teaching at schools has been hitherto such that but scanty regulations are provided for the well-being of the body, the cramming with learning and accomplishments being the chief, if not the only, object aimed at. It is thus teachers fail of success; their true policy consists in a regulated alternation of work and play. Who that has ever been a hard student has not known, after some hours of severe study, both the great relief derived from a walk taken with a mind in repose, and the freshened energy with which study can again be applied to, enabling him to conquer the difficulties of the very same subject which before had appeared nearly insurmountable.

In the education of young women too little attention is given to subdue the imaginative faculty and to moderate sensibility; on the contrary, they are generally fostered. It is thus there is too often laid the foundation of hysterical, hypochondriacal, and even maniacal diseases. The truly frivolous occupations of fashionable life, and that affected refinement which debars natural and active exercise, also nourish these tendencies, and become predisposing causes of every form of nervous disease, endowing

slight causes of disease with undue power. To regulate the passions should be our constant study, for the exciting passions, when in excess, give rise both to spasms and convulsions, while the depressing passions relax the whole muscular system. The influence of education and of a due regulation of the passions is incalculably great.

SLEEP.

Both mind and body require diurnal rest for the healthy exercise of their functions. The fatigued muscle must recover itself, and the overwrought mind would at length break down, if sleep did not enable it to cease, for a time, from all excitement and activity. The most complete repose is, of course, the most salutary; and to secure this, both body and mind should have been exercised during the day, just so far as to avoid painful fatigue or exhaustion; the circulation should not have been excited by deep study, intense thought, nor by any stimulant, for some time previous to retiring to rest. Late and copious suppers should be avoided; the head not kept too warm; while the feet, especially if they are disposed to be too cold, as in many females, should be brought to a healthy temperature, before getting into bed. An iodine warm foot-bath, with a little cyanuret of potass in it to prevent itching, will be found serviceable. Lastly, the cares of the day should be put off with the clothes.

The quantum of sleep varies with the circumstances of an individual, some requiring more than others. One author tells us that the oldest man he ever personally knew, a man aged one hundred and eight, informed him that he rarely exceeded four hours of sleep in a single night at any period of his life; but from six to eight hours may be regarded as the proportion for a healthy adult. Too much sleep favors apoplexy and coma, and too little wears out the brain and nervous system, and might induce a suspension or impairment of their functions.

The bedrooms should be spacious, or, at least, well ventilated; their temperature should be moderate, and not subject to any great diminution throughout the night. The bedsteads should have few hangings of furniture, merely at the head; and featherbeds are too relaxing. The bedclothes should be well aired every day; those who perspire freely during sleep should change their flannel under-garments for some lighter covering.

EXERCISE.

It is no new thing to extol the virtues of exercise. Ferrandus, in the seventh century, calls it a spur of a dull, sleepy nature, the comforter of the members, cure of infirmity, death of diseases, destruction of all mischiefs and vices. And another author says idleness enervates the frame, labor fortifies it; the first tends to produce premature old age, the last to perpetuate adolescence.

The amount of exertion should never exceed that healthy degree whereby a grateful sense of activity and comfort is produced; for otherwise exhaustion and much discomfort will ensue. It must be proportionate to and kept within the powers of the individual. The exercise should be taken daily, and, if feasible, in the open, dry air; and the invalid, who at first may be able to walk only a short distance, should not exceed that distance for some time, but augment it gradually and daily. In the case of females, the muscles should have full scope; and all ligatures, every thing that presses upon or confines any part of the body, such as tight stays, etc., should be avoided. An anatomist informs us that Mademoiselle Leblanc, a young French milliner, remarkable for the smallness of her waist, died at Edinburgh, an early victim of consumption; and he found that those portions of the muscles in the belly, back, and loins, which had been subjected to the highly-strained pressure of the corset during life, were reduced to the consistence of a soft, flaccid cellular tissue, faintly sheeted with muscular fiber. Yet, notwithstanding the now generally-acknowledged bad effects of tight stays, or of any thing which impedes the free action of the muscles and the breathing, the practice will still continue with all those silly females who are ambitious to appear wasp-waisted; and parents should vigilantly guard against it. Even the infant, at its very entrance into life, does not escape; for the nurse, in dressing it, bandages it up so tightly as to compress its chest, prevent it from expanding properly, thus favoring the formations of the chicken-breast in children predisposed to consumption and scrofula. Pressure, too, is sometimes unintentionally exercised in the case of rapidly-growing girls, by their clothes becoming too small; wherefore they should be examined from time to time, or otherwise a pernicious habit is thus early originated of first bearing and then requiring artificial pressure and support.

India-rubber bottle, stuffed with wool, and affixed to a cane handle. In this way we can imitate the action of the natural douche baths of Aix, in Savoy, and some other continental watering-places, which combine the influence of heat and percussion. A temperature of 160° is readily borne in douching.

Patients who are suffering from deep-seated pains, or from chronic rheumatism, should be douched and percussed in this manner for half or three-quarters of an hour at a time, and they should afterward be placed in bed between blankets, to encourage sweating. In stiff, enlarged, and painful joints, the greatest advantage has resulted from this douching; but it must be persevered in for two or three months, or longer, before the crutches can be laid aside. In certain cases of fevers, and in a state threatening inflammation of the brain, the cold douche is to be tried. The first effects are not pleasing, but relief is so quickly experienced, that the patient generally requests a repetition.

The Air-pump Vapor Bath will confer relief and benefit in cases of gout, rheumatism, contracted joints, and other chronic ailments, where the preceding have failed. This bath must possess considerable power as a remedy in obstinate cases, since it may stand in the place of a very efficacious fomentation and dry cupping. It first conveys the soothing vapor to the part affected, and then, by exhausting the air, a vacuum is formed, or the atmospheric pressure is taken off so far as to allow of a temporary expansion of the vessels, by which operations a probability is afforded of removing obstructions.

To recapitulate: We should avoid cold bathing when the habit of body is generally full; in diseases attended with discharges of blood, with quick pulse, and an excited system; in all kinds of acute inflammation; in diseases of the breast, attended with short dry coughs—difficulty of breathing; in gout and rheumatism; in diseases of the skin—during a state of pregnancy; in palsy, and in many cases of indigestion, though in other cases of stomach disorders, where reaction soon follows the first shock, it may do good.

The Shower Bath (beginning with tepid water) is, in most cases, preferable to bathing in cold water, since the sudden contact of the water may be repeated or modified at pleasure. The head and chest are secured from danger by receiving the first shock of the water, and the blood propelled toward the legs, so that

the head and chest feel comparatively light and unincumbered, while all the pressure of the water which occurs in the cold bath is taken off.

One caution with respect to cold bathing should here be given, and it applies also to drinking cold water as well. It is that we may bathe fearlessly in cold water, although we may be unusually heated, provided the heat is steady and permanent. "Increased heat, whether from exercise or other causes, does not forbid a cold bath, provided the cause of the increased heat remain in action, that there is no local disease, and that the body *is not fatigued and fast losing its heat*. But if a person be already exhausted and weakened by exercise; if he be sweating and rapidly parting with his heat, and especially if the exercise be over, and he remain at rest immediately after and during the application of the cold, then it becomes highly perilous, and likely to produce internal mischief." The application of cold, then, is dangerous, not when the body is hot, but when the body is cooling after being heated.

In this way sudden deaths have been occasioned by men who have been working very hard, unto some exhaustion and great sweating, and who have suddenly drank large quantities of cold water.

When dangerous symptoms arise, either from bathing in cold water injudiciously, or from drinking cold water when heated and exhausted, the remedies are warmth immediately to the pit of the stomach, and laudanum in free doses.

The wet-footed or wet-skinned sportsman need not fear danger so long as he continues in active exercise; nor need the bather who has walked to the cold bath wait till he cool ere he plunges in; neither should the young lady, after heating herself by dancing for many hours of the night in the ball-room wait in the hall to cool before she gets into her carriage, but let her go directly home and into bed as soon as she can; while the gentlemen who are returning from balls or parties in a heated state should not wait to get cool, but put on their great-coats and walk briskly home to bed.

"The heat which is preternaturally accumulated by exercise is held with little tenacity, is dissipated by profuse perspiration, and is speedily lost when to this perspiration is added a state of rest after fatigue." Under such circumstances cold is prejudicial.

The tepid bath is admissible and useful in almost all cases—

during infancy, pregnancy, and especially old age. Women who dread tedious and painful labors should have a tepid bath three, four, or five months before their expected time. During puberty the tepid bath may be very useful, though it is not advisable to allow of sea-bathing for about two years during that period.

This tepid bath is of service in indigestion, in liver complaints, in debility and extreme weakness, in contractions of joints, and in skin diseases. From 10 to 1 P. M., that is, after breakfast, is the best time, and gentle exercise is to be taken after staying in the bath from twenty to sixty minutes.

The warm bath is employed in acute rheumatism, inflammation of the abdominal organs, of the kidneys, bladder, and womb; in suppression of urine; in the convulsions from teething and other causes; in skin diseases, slight palsy, green sickness, St. Vitus's dance; in convulsive and other spasmodic affections; in costiveness, intestinal obstruction, and in debility, with nervous irritation. It agrees with weak, delicate, nervous women who have suffered miscarriages from sexual weakness, etc.

When perspiration is to be elicited, the evening—ten minutes before going to bed—is the time for the bath. When not intended to excite perspiration, any time from an hour after breakfast till dinner will be proper, when fifteen to twenty minutes or thereabouts should be the time for staying in the bath; but this may be as the patient likes. Gentle exercise in the open air (if weather permit) should not be neglected after each bath.

The Vapor Bath is indicated where the warm bath is useful. It excites an increased action in the superficial arteries, and thus diminishes the blood in the interior of the body; wherefore it is of service in inflammatory fevers, inflamed bowels or stomach; in liver complaints, dropsy; in scrofula, gravel, palsy, and gout, as well as in rheumatic affections. Use it in the morning, or before dinner, for ten or fifteen minutes, or even double that time. In all cases of bathing, the body should be properly dried and rubbed.

We may here introduce a few observations on the system called Hydropathy; and the word, taken in its strict etymological acceptation, is apposite enough, for it means water diseases, or diseases caused by water. Some of the clearer-sighted of its advocates now call it the water-cure system.

The credulity and ignorance of the general mass of the pub-

lic is in no instance more clearly exemplified than in its eager acceptance of any system of quackery which should be boldly put forward as infallible, and which possesses, at the same time, a few features of plausibility to argue upon.

To the words credulity and ignorance it may be objected that the favorers of all the successive systems of quackery have not been confined to the low, poorer, and ignorant classes of mankind, but many of them have been men of intellectual eminence, and men both wealthy and titled. To style such persons ignorant seems startling and indefensible; yet all such persons are ignorant with respect to medicine and to the sciences upon a knowledge of which it is built up, an adequate acquaintance with which can only be acquired by many years' study of anatomy, physiology, pathology, and its cognates. The only remedy lies in opening the eyes of the public to the grossness of the delusions which, in matters relating to medicine, they practice upon themselves, or allow others to practice upon them. Surely, it will be admitted that a knowledge of the nature of the disease under which a patient labors is an indispensable preliminary to the safe and proper management of his case; and if, in attempting to arrive at this knowledge, so many sources of difficulty and fallacy await even the best informed medical practitioner—he who is furnished with all the means of avoiding and overcoming them which the accumulated experience of ages has been able to discover or invent—the prudent man may hesitate before he admits the belief that these difficulties can be overcome by persons of no scientific instruction, and who professedly reject all aid from the observations or experience of others, he may well pause to consider whether the discrimination of such a person can be with safety relied on, and whether the freedom of such a person from doubt or uncertainty in diagnosis may not arise from the rash presumptuousness of ignorance rather than from the reasonable confidence which knowledge is calculated to inspire. Foster, in his "Essays on Decision of Character," says, that a confident decision on any subject may arise either from knowing all that is to be known of that subject, or from complete and total ignorance. In which category of the two we ought to place the presumptuous, unprincipled quack hardly need be told.

The writer of these lines has seen the rise and fall of many a quackish medicine and system; and one of the first examples

of the power of the imagination over the body, upon which the quack most relies for success, was afforded in reading the history of Perkins's Metallic Tractors. Dr. Haygarth was resolved to test the said tractors on some suitable case in the hospital which he attended; and, as a preliminary, he tested the natural temperature of the patient by putting the bulb of the thermometer under the man's tongue. The latter, knowing the tractors were going to be tried, thought the thermometer was the tractor, and cried out immediately that his pain (rheumatic or neuralgic) was gone. Upon this, Dr. Haygarth continued to apply the thermometer daily; while on other patients wooden tractors, made exactly like the metallic tractors in outward semblance, were tried, though there was no metal in them. The wooden and the metallic both acted alike; that is, similar effects were produced.

To the metallic tractors succeeded other systems of quackery, all enjoying more or less of patronage from certain classes for a time, until we arrive at these days of patent pills, Vegetarianism, Eclecticism, Homeopathy, and Hydropathy.

With respect to this last, there is no doubt but that, as an auxiliary to medical treatment, and under the superintendence of medical practitioners, it may yet take its place, and, with judicious management and restriction, may do much good. But the true hydropathist relies on water, and water alone, for the cure of all diseases; and thus many a credulous man, who can afford to pay well, will be made to drink water to excess, to live on a most wretched diet, in some cases; to be bandaged up like a mummy, and to be pumped upon till the breath is well-nigh beaten out of him. Still, there were some cases in which good was, no doubt, effected; and can we not give a guess how such good may have arisen, or how it may be rationally accounted for? It is an undoubted fact that, however impatient sick persons are under the regimen and restrictions of diet imposed by the professionally educated adviser, they no sooner place themselves under the care of a quack, than the directions as to diet, in quantity and quality, and as to other matters, are cheerfully submitted to. The author was told of a gentleman of leisure who consulted, many years ago, the most fashionable physician of his day. The gentleman had lost flesh, and complained of the usual symptoms of indigestion. When his doctor began to restrict the diet, the patient induced him to allow a diet almost as full as that he was used to—

soup, fish, meat, game, and pastry. The patient getting no better, then applied to the then leading Homeopath. What did he do? He made him rise at half-past seven in the morning, instead of half-past ten or eleven, and take an early walk; he allowed him only a very restricted diet, with orders to avoid certain drinks, odors, etc. In a few weeks this gentleman's stomach recovered its powers, and he recovered his flesh. This was a cure, said to have been effected by the globules of homeopathy, after the most eminent physician of the day had failed. Yet such a case wanted only Dr. Common Sense to prescribe, and no one else.

As a parallel case, and to show the good effects of exercise as an auxiliary to treatment by the mineral waters, the writer read of a patient who received the greatest possible benefit from some mineral waters. After a few years he tried them again, but they totally failed, until he discovered that he had omitted the regulated exercise which had been ordered during his first visit. So shall we find it happens in hydropathy, that much of the good effected arises not so much from the water as from the walks, the rides, the mountain scenery, to ascend which, as we have seen, requires blood-purifying exertions of the muscles; and in the case of the mind-shattered student, author, or merchant, from the mind having left its cares behind.

The water itself must do good, by cleansing the skin, by eliciting perspiration, and a healthy state of its pores; and when it is tried in proper cases, no objection can be raised against it. These restrictions would not suit the hydropathic enthusiast, who insists that his system will cure all diseases, if persevered in long enough. Such persons either do not or will not see how very unreasonable and unphilosophic it is to make the skin an outlet for all diseases, when nature has established many outlets of secretion, as those who have read the preceding observations on secretion have seen.

In diseases of the liver, the chief outlet is through the bowels; in those of the kidneys, through the urine.

No hydropathist used to be contented with any thing less than the appearance of an ill-conditioned eruption on the skin, which was looked upon as critical, and as a sign that the disease was thus thrown out of the system; but which, it is more likely, was really and truly a manifestation of the skin having been stimulated

to the extent of disease, and of the blood having been at length put into a more watery condition than it should possess in health. For there is a law in the human animal economy, which has already been glanced at, namely, that one organ will often act vicariously (in place of another) for another. Thus, in hot climates, less carbon is abstracted from the blood, during respiration, than would be consistent ultimately with health, and then both the skin and the liver act vicariously; and copious perspiration, with bilious diarrheas, keep the blood in a state of purity for a time; but in thus doing more duty than nature meant them to perform, their power of action becomes diminished, and disease is set up at last.

We should make use of the skin, then, as an auxiliary to our other means of treating diseases, but not as the sole dependence.

We will now give a short description of the mode in which the water is applied, mentioning some of the diseases in which the hydropathists recommend them to be used.

The means employed in the water-cure are the cold bath, the sudorific (sweating) process, the shallow bath, the wet sheet, the sitz bath, the wet bandage, the douche, and the foot bath.

In the sweating process, the patient is undressed and enveloped in a large blanket; the legs are stretched out, and the arms kept close to the body; the blanket is then wound round the body as tight as possible, and turned under the feet; over this, another blanket or two should be wound round, and over all a small feather-bed is placed; a counterpane and a sheet are spread over all. As soon as perspiration appears, the windows are opened, and a wine-glassful of cold water is allowed every half-hour, if desired. If the head begins to ache, a wet cloth should be applied to the forehead and temples. The cold bath is then taken, if the patient seems strong enough to secure reaction. The sweating process should precede the cold bath, for the perspiration relieves the internal parts from fullness, and the patient is then better able to support the shock of the cold bath. After all the baths, the patient is dried, not with towels, but by a sheet thrown round his body, drying the whole body at once.

The Shallow Bath is long enough to sit or lie down in, or to sit down in with legs extended, and should contain six or eight inches or more of water; and the water may be either tepid or cold, the tepid being preferable where there is local inflammation

or fever, and the cold when there is general debility. Patients sit in this bath, and should be rubbed well all over, and cold water may also be poured on them. Few cases of debility will not be benefited by this remedy; and chronic inflammations will be either relieved or cured by it. The bath is to last from one to ten minutes, according to the judgment of the prescriber.

The Sitz Bath is our hip bath; it is usually about eighteen inches in diameter, and contains about two gallons of water, cold or tepid. The patient should sit in it every day, or twice or even thrice a day, for from ten to thirty minutes. It is of great benefit in disorders of the abdomen, head, or pelvis (hips). In weak bowels, torpid liver, in irregular periods, it should be tried. This and the foot bath relieve the head, remove congestions (partial fullness of vessels) and lower the pulse.

The Foot Bath is oblong and shallow, contains about two inches of water, or even one inch only. The time of sitting in the bath is about eight or ten minutes, and the feet should be rubbed in the bath, and rubbed dry afterward, when a brisk half-hour's walk should be taken. This is useful for head affections, blood to the head, headache, eye diseases, and cold feet.

The Douche is prescribed to invigorate weak parts, and consists of a fall of water from a height varying from twelve to eighteen feet, or more, and the stream should be about the thickness of a man's wrist. The undressed patient exposes one member or part of the body, then another, to the stream for two, three, or five minutes, taking care that the chest and head shall not receive the stream and shock.

The Splash Bath.—A small stool is placed in a shallow bath; upon this the patient sits, and is well splashed by the attendant.

Wet Spinal Friction.—The patient, undressed, stands, or sits upon a stool, upright in a bath, while the attendant rubs his back with a towel dipped every now and then in cold water. One or two minutes should not be exceeded in doing this.

Wet Friction.—Similar to the foregoing, only the towel is wrung dry, and the patient rubs the front, while the attendant rubs the back of the body for one, two, or more minutes, and the patient is then wrapped in the drying sheet and dried.

Under-blanket Friction.—The patient lies down upon a mattress, covered by a single blanket; a second is thrown over him. The bathman dips a towel into cold water, wrings it out more or

less, and having wrapped it round his hand and wrist, introduces his hand beneath the upper blanket, and rubs the patient's body, back and front, and the extremities, for from two to ten minutes. The towel may be dipped into water as many times as may be deemed necessary. This is applicable to cases of debility, where exercise is impossible.

Wash-down—of three towels, as it is called. The patient stands in an empty tub or bath, beside which stands a pail of cold water, with two coarse towels soaking in it. The attendant places one of the towels on the patient's head, loaded as it is with water, who seizes it, and rubs himself rapidly with it over face, throat, shoulders, chest, body, and legs, and lets it drop into the water, when the attendant, who has been doing in like manner with the patient's back, puts another charged towel on the head, and so on to a third. The patient is then rubbed in the drying-sheet, dressed, and sent out to walk.

Upstanding, Dripping or Rubbing Sheet.—The patient stands upon the floor, or in a tub or bath. A sheet of convenient size is then dipped in cold water, and as much of the loose sheet is wrung out of it as will keep it from dripping at the bottom. This is thrown over the patient, head and all, from behind, like a cloak, and it should be long enough to reach down to the ankles, and wide enough to enable the patient to seize those loose parts of the sheet, which will hang in front, and use them as towels. With those loose portions of the sheet, the patient must actively and rapidly rub himself from his face to his feet; the attendant rubbing him well, meanwhile, behind, not with the folds of the sheet, but he rubs the sheet itself with his hand, as the sheet clings to the body, and without moving the sheet. This is done for two or three minutes, and then the dry sheet is put on, and the patient rubbed till he is dry.

This may be done in the recumbent position, while lying on a blanket, thrown over a mattress, where the patient is too weak to stand. Priessnitz used this in Asiatic cholera.

Can or Pail Douche.—The vessels, one or more, as ordered, are thrown over the patient suddenly, before and behind, and thrown with some force; then the drying-sheet.

The Douche, for one or two minutes, protecting the head with the hands, is very delightful.

Weet-sheet Packing.—This is said to be the crowning glory of

the water-cure; and Dr. Johnson speaks of it as a discovery which, before fifty years are past, will place its author, in the world's estimation, upon a par with the discoverers of vaccination and of the circulation of the blood, and as a remedy which reduces inflammation as speedily as the lancet, but is followed by none of that debility which results from loss of blood, and as combining the soothing powers of opium with the tonic power of quinine, while it slowly extracts from the blood the poisons of gout and rheumatism. It is serviceable in both acute and chronic disease, and approaches nearer to a panacea than any drug or medicinal application.

The process is the following: Place a pillow upon a mattress, and upon the mattress, and partly over the pillow, spread two blankets; upon the blankets lay a sheet which has been dipped in cold water, and then wrung out as dry as possible by two persons' strength. Upon this damp sheet the patient lies down undressed, with his head reposing on the pillow. The sheet is then folded tightly round the body, and the blankets are folded round the sheet. Then several blankets, one after the other, are laid upon the patient, and tucked well in on all sides around him, so that he lies completely incased, and not able to stir hand or foot. A linen napkin is interposed between the chin and the blankets, to prevent irritation. Thus he is to lie for fifteen to thirty minutes, or even an hour. Then he is taken out of the packing, and immediately submitted to the shallow bath, dripping-sheet, wash-down, or pail douche. Then the drying-sheet is wrapped round him, and he is sent out to take exercise, or he is ordered to bed, according to circumstances. This is the wet-sheet packing.

The Blanket Packing is performed without any sheet, but the patient lies on a mattress, covered by two blankets. There is some art required to cover the body with the blankets by turning down the corner under the chin, and tucking it over the opposite side of the body; then the rest of the blanket is brought over evenly and tucked under the opposite side, until the blanket is made to tuck in and under the feet and ankles. The opposite side is covered in like manner, and then a couple more blankets are put on. The windows may now be opened, and weak black tea given, if necessary; and if the head get uncomfortable, a wet towel may be applied to it. Perspiration will appear sooner

or later, but sometimes not before two, three, or four hours have elapsed. After the packing, some form of cold bath should be taken.

The Half Wet-sheet Packing, in which the sheet extends from the armpits to the knees, the arms not being included.

Front and Back Towel Packing is by means of a towel wrung out of a cold bath, applied to chest and back.

The Hot Air Bath, by means of a spirit lamp placed under a cane-bottomed chair or stool, on which the patient sits enveloped in blankets; but the vapor bath, already described, is more powerful, and is well adapted for the poor. By this latter, Dr. Johnson says he has cured diseases which had defied all ordinary remedies, and which promised to embitter the whole future existence of the sufferers.

Then there are the head shallow bath, the head douche, head plunge, eye or ear shallow bath, eye douche, mouth-washing; the running sitz bath, in which water is continually running in and out; the fountain sitz, where the patient sits upon a stool with a central aperture, through which a jet of water rises; the hand shallow bath and handful bath; the elbow, the arm shallow, arm plunge, and arm immersion; the foot and leg shallow and full baths; the leg plunge and leg immersion, local douches, and friction with wet hands, all which need no particular detail of directions.

These baths are employed to reduce heat and the quickness of the pulse, and to quiet nervous agitation. In fevers and inflammations, the wet-sheet packing is to be preferred; but in convulsions, and most other nervous affections, the shallow baths and its congeners are proper. A slow and gentle reaction follows the wet-sheet packing, and this is preferable to a sudden one, in the treatment of fevers and inflammations; but the shallow bath and affusion are appropriate to nervous affections, for the reason that renders them inappropriate in the treatment of fevers and inflammations.

The same author thus describes the effects of the wet-sheet packing: A considerable quantity of heat is at once abstracted, the person feels chilly, but in a short time the powers of the system reproduce an equivalent amount of heat, and a genial warmth. The action of the heart and arteries is depressed, a soft langour steals over the frame, and a disposition to sleep. This

process, if unduly prolonged, would be enervating and debilitating; but it is inexpressibly soothing and restorative in feverish and many other conditions of the system.

The Wet Bandages, or Umschlags, which, by-the-bye, are not peculiar to the hydropathic system, since they have been in use by the medical profession for centuries, are useful in most local complaints, and in constipation. They are made of coarse linen, of any convenient width, and are employed by the hydropathist in gout, rheumatism, ulceration, swellings, sprains, and weakness of the limbs. They should be worn all day, and sometimes during the night. In active inflammation, the linen is dipped in the coldest water, wrung out, applied to the part, and taken away and replaced as soon as it becomes warm; but when there is no inflammation the wrung-out cloth is applied, and a dry bandage placed over it, so as to promote perspiration.

When we want to apply a bandage round the body, it should be three or four yards long, and twelve or thirteen inches broad, of which one yard is to be dipped in cold water, wrung out, and then laid over the stomach and bowels, the remaining yards being wound tightly over it, and tied on one side. In sprains, bruises, and in rheumatic and gouty joints, the wet bandage must be covered with a dry one.

The rationale of the beneficial effects of the water-cure system is based by the hydropathists upon the researches of Liebig. Into these we can not enter for want of room, further than in a way of summary, extracted from a lecture delivered by Dr. Johnson. A person, in an average state of health, submitted for a minute and a half to that process which has been termed taking the shallow bath, imparts to the water sufficient heat to raise a gallon of water thirty degrees Fahrenheit; that is, to raise a gallon of water from sixty to ninety degrees. Of course this quantity of heat is abstracted from the body, and must be replaced, and it is replaced; for the patient is actually warmer when he gets out than he was when he got into the bath. Whence comes this newly generated heat? The heat of the body is produced in the same way as the heat of an ordinary fire; that is to say, animals are kept warm by a process of combustion, by the combustion, or oxydation, of very minute particles of their own bodies, and this combustion takes place throughout the whole fabric. As fast as heat is abstracted, so is combustion

increased by increased action of the vital powers. After a cold bath the fires burn more quickly, and an increased consumption of fuel occurs. Now the body itself supplies this fuel, and the body would, consequently, waste if it were not repaired with equal rapidity, and the solids destroyed are thus replaced instantly from the blood which solidifies on the vacant spot. The fluid blood becomes reduced in quantity, but, at the same time, a sense of hunger and an augmented digestive power are developed, and an increased quantity of food is sought for, digested, and converted into healthy blood; so that the blood increases in volume, and the body becomes more bulky and more powerful.

The internal use of water has not been adverted to, but the drinking quantities of cold water has been practiced for ages, and long before the water-cure system was talked of. It acts by diluting the blood; but many can not drink cold water at all—it chills too much.

From this somewhat lengthened description of hydropathy, it will be conjectured that the author thinks much good may be derived from a judicious application of it, under men professionally educated; otherwise, hydropathy may become an engine of mischief instead of an instrument of good.

One need not wonder at the opposition which the system first encountered, for it was said to perform cures almost miraculous; and the books first written on the subject were written in a tone of desperate exaggeration, of blind and obstinate one-sidedness, and evidently with an *ad captandum* object, which took advantage both of the *suppressio veri* and the *admissio falsi* (suppressing unfavorable truth, and admitting favorable falsehoods); whereas, in all our investigations, our object should be truth, and not the defense of a system.

That it may be useful in many cases there can be no doubt, but those cases must be duly selected by men competent, from their previous studies, to form a correct judgment as to the nature of the case and the process which ought to be employed. Priessnitz certainly performed some extraordinary cures, but he very often failed to benefit his patients, because of his violent and extreme measures. Nor must we forget that his sanatorium, being close to mountains, was favorable to his success by affording air, exercise, and variety to persons in a state of confident hope that they were about to be cured. Air, exercise, and

variety, combined with early rising, a regulated diet, and the absence of ball-room parties and concerts, will always effect much good without any other help.

It is worthy of notice that one of the advocates of hydropathy (Mr. Claridge), who was an early, a bitter, and an uncompromising opponent of doctors and of drugs, traveling over many places to promulge hydropathic doctrines, has himself been obliged to apply to one of the much-abused doctors, and, moreover, to take one of the decried drugs; and the writer was informed by a physician, now dead, that a celebrated gentleman, who had written a very poetical eulogium on the water-cure treatment, which he had undergone in a particular place, was obliged to or did apply to him, very shortly afterward, on account of the very same ailment which had been said or supposed to be cured by the water-cure system. In the latter instance, temporary good had probably been effected by mountain air, early rising, keeping the skin in order, and by having nothing exciting or disquieting to think of.

It is one great objection to the water-cure, that it is attainable by the wealthy and idle only. The poor man is precluded—first, because he has not the money necessary; and, secondly, because he can not spare the time necessary to effectually obey the directions, and to perform what is indispensable.

FOOD AND DIET.

We have before said that all vital action is accompanied by a certain expenditure of the various substances which compose the textures of the animal body, and which are found in the excretions of the body—the lungs carrying off a large proportion of the carbon and hydrogen, the kidneys almost the whole of the nitrogen, together with a large proportion of the inorganic salts; and the alvine evacuations contain a mixture of carbon, nitrogen, and inorganic matter. Food, therefore, is required of such nutritious character and in such quantity as will yield an amount of carbon, nitrogen, water, and inorganic salts sufficient to repair the waste of the body. If this be not done, the excretions (outgoings) exceed the incomings, and the person must lose flesh.

But there are two vital processes going on which require supplies of suitable aliment for their support. The first is the one alluded to in the foregoing paragraphs; namely, the waste of the

tissues. The other is the function of respiration, on the support of which depends the temperature of the body.

The first is accompanied by the expenditure of a great quantity of nitrogen, which is thrown out by the kidneys; the second, by a large consumption of carbon, which appears in the exhalations from the lungs.

Articles which are best suited for the repair of the tissues abound in nitrogen, and are called nitrogenous articles of diet; those which supply material for respiration, and abound in carbon, are called non-nitrogenous articles of diet. Nitrogenized foods, or plastic elements of nutrition, are vegetable fibrine, vegetable albumen, and caseine, animal flesh and blood.

Non-nitrogenized foods, or elements of respiration, are, fat, starch, gum, cane-sugar, grape-sugar, sugar-of-milk, pectine, bassorine, wine, beer, and spirits.

The animal tissues contain nitrogen as one of their essential constituents. The non-nitrogenized foods alone are incapable of supporting animal life, since they can not supply the animal tissues; wherefore, if these assertions be correct, it follows that the food of all animals must contain nitrogenized materials. It is easy to see how man can be nourished by the blood and the flesh of animals; that blood and that flesh are, in all respects, identical with their own. But those animals have been of the herbivorous and graminivorous kind; and, as they ate no flesh, which contains the nitrogen, it was long an enigma how they obtained the nitrogen whereof their muscles, etc., consisted. But the riddle has been solved with certainty, by the discovery made by Baron Liebig, that all such parts of plants as serve for food to animals contain certain constituents, which constitute nitrogenized forms of nutriment, called vegetable fibrine, vegetable albumen, and vegetable caseine. These constituents have been obtained from carbonic acid, water, and ammonia; that is, from the constituents of the atmosphere, with the addition of sulphur, and of certain constituents of the crust of the earth.

These three vegetable constituents are identical with, and resemble, in every respect, their analogues, animal fibrine, albumen, and caseine. Albumen, of which we have a familiar example in the white of the egg, is the form into which all the substances which contribute to the nutrition of the animal tissues or textures must be converted before they are absorbed. Albu-

men exists as a chief and characteristic ingredient in the fluid part of human blood; but it can not be made use of as the material for the production of tissue, until it has undergone considerable alteration, by which fibrine is formed. This converted albumen, or fibrine, is not to be met with in the first products of digestion, but it is gradually formed at the expense of the albumen which these supply; and as the fibrine flows to every part, in and with the blood, and is deposited to form new textures, it is reformed from the albumen, which is elaborated from the food. Fibrine, then, is something intermediate between albumen and solid tissue; and it has been very appositely termed by the French *chair coulante*, or liquid flesh. By the act of nutrition, it is converted into new fibers, new cells, etc., in connection with those already or previously formed; and the waste, or dead matter, which is being constantly set free in the action of the several organs, is conveyed away. Part of this waste matter is got rid of by uniting with oxygen in the lungs during breathing, and is thrown out in the form of carbonic acid and water, while the other parts are got rid of by excretion, which separates the injurious substances from the blood, and pours them, in a fluid form, into channels by which they are conveyed out of the body. The respiration, besides purifying the blood, introduces oxygen, and thus conduces to the maintenance of the animal temperature. Thus admirably have arrangements been made by the Omniscient Creator of all.

But we must now proceed to the cookery of food.

Foods possessing an organized texture, as animal flesh and amylaceous substances (starchy or farinaceous matters, as Iceland moss, tapioca, potato, arrow-root, bread-fruit, barley-meal, oatmeal, wheat flour, rye-meal, rice, peas, beans), require to be cooked, previous to use. The oyster is an exception, which is more digestible raw than cooked. Apples, pears, and some other fruits are also exceptions.

By salting, smoking, and pickling, the animal textures become harder and more indigestible; wherefore they become unfitted for dyspeptics, excepting only bacon, which occasionally proves more digestible than the fresh fat. Sausages, cured meats, and decayed animal substances, when kept too long, often act like poisons. We can not, in our present knowledge, explain why, except by resorting to hypothesis.

Boiling is the operation best suited to the sick, the dyspeptic, and the convalescent. In boiling vegetable matter, we effect the solution of the gummy and saccharine substances, and the expulsion of volatile oil, in part or altogether; and this last operation renders some vegetables milder, less irritating, and more nutritious than if eaten raw, as in onions, leeks, garlic, shallots. By boiling, starch grains are ruptured and partially dissolved, rendering them more digestible; for the outer laminæ, or layers, of the starch grain are thicker, more cohesive, and less easily digested than the inner. The albuminous and fibrinous liquids are coagulated, as in the potato. It may here be remarked that the potato is a solanum, and contains solanine, a narcotic poison, in some parts of the plant; yet if any be contained in the potato itself, it must be destroyed by the heat in boiling, as in the cassava-root. Nauche asserts that the infusion or decoction of potatoes promotes the renal and biliary secretions, and affects the nervous system, which would seem to prove, if true, that the water in which potatoes are boiled, extracts or destroys some noxious matter.

In boiling meat, its fibrine becomes harder, which fibrine, being insoluble in water, contributes nothing to the liquid. The albumen of the meat is partly solid, partly liquid. The latter is coagulated by the boiling water, and a portion of it is soluble, and contained in the broth.

The coloring matter of the blood colors the water, but forms flocculi ultimately, which float on the top as scum; the cellular tissue, the bones, and tendons yield gelatine, or jelly; the fatty matters melt and float on the top, unless inclosed in the cells of the meat; the nervous matter is carried off in part during the process.

Overboiling proves injurious in some cases, as in eggs. An egg boiled so as to coagulate the white, or albumen, and leave the yolk fluid, is nutritive, and moderately easy of digestion; but a raw egg will often cause diarrhea; wherefore, it has been given in jaundice and obstructed liver; and an overboiled egg is very indigestible by most people, and still more so when fried in pancakes, fritters, and omelettes. Gelatinous foods are less digestible and nutritious when overboiled. Leafy food, as greens, cabbage, etc., require to be well boiled, or they will be indigestible.

Roasting is the next best process of cooking for the invalid. It splits and renders soluble starch grains; it coagulates the vegetable albumen; it deprives flesh of part of its water, liquefies the fat, which partially escapes; it coagulates the albumen, and corrugates the fibrine. Roasting, as in boiling, does not effect any change in the nitrogenous part.

Roasted meat should be neither under nor overdone. The notion that underdone meat is the most nourishing is an error, for the juice, which is more abundant in the undressed meat, is almost entirely aqueous, and can possess very slightly nutritive qualities. By prolonged roasting the water of the juice is evaporated, and the nutritive matter remains almost entirely in the cooked meat, the solid or dry matter of which is identical with that of raw meat. Well-done meat has a little less, both of fat and water, than under-dressed meat, and it is more digestible. Roasting differs from boiling, in not extracting the gelatine.

Broiling effects the same changes in meat as roasting, only more rapidly; it scorches the outside of meat, while the inside retains its juiciness. Broiled meat, like roasted meat, is more savory than boiled meat, though less fitted for very delicate stomachs; but, nevertheless, a well-broiled mutton-chop, cleared of fat and grease, is generally a most unobjectionable dish for the dyspeptic.

Baking is an objectionable process. Its general effects are analogous to those of roasting and boiling. But meat so cooked is much impregnated with empyreumatic oil, and is, therefore, unfitted for delicate stomachs. Baked potatoes are less nutritive than boiled ones.

The dyspeptic must avoid all baked foods, except, perhaps, baked amylaceous puddings, such as puddings of sago, tapioca, arrow-root, rice, etc.

Frying is the most objectionable of all the processes of cooking, fried foods being more indigestible by the invalid than when cooked by any other process. The influence of heat on fatty substances effects various chemical changes in them, whereby they are rendered more difficult of digestion and more obnoxious to the stomach. The heat is applied in the form or through the medium of boiling oil or fat. Now, fixed oils give off, while boiling, carbonic acid, a little inflammable vapor, and an acrid volatile oil, and the fatty acids of the oils are, in part, set free. Cooked

butter proves more obnoxious to the stomach than cooked olive oil, for probably the acrid volatile acids of the butter are, under the influence of the heat, set free.

The invalid, the convalescent, and the dyspeptic must, therefore, avoid this method of cookery; and must abstain from the use of eggs, omelettes, pancakes, fritters, fish, livers, and other dishes cooked by frying.

TIMES OF EATING.

The time required for the digestion of the food, by the healthy stomach, varies from one to three hours and a half, or thereabout; and after the stomach has been empty some time, a shorter or a longer time, according to circumstances of age, exercise, etc., a desire for more food may arise, and until this hunger or desire for food arises, fresh food ought not to be introduced into the stomach, or we shall impair digestion in the end.

The length of interval between each meal must vary with the age. As, for instance, children, whose organs of breathing are active, require to be more frequently fed than grown-up persons; so do persons who labor hard or take much exercise. A bird, with its active respiration, deprived of food, dies on the third day; a serpent, with its sluggish breathing, can live without food three months or longer.

The carnivorous animals are better with only one meal every twenty-four hours.

Three meals a day, breakfast, dinner, and supper, are the sufficient and usual number, though in fashionable and hotel life luncheon and tea are frequently added. Between two full meals six or seven hours should intervene.

Breakfast is better taken very soon after rising, for, in the morning, the system is susceptible of morbid causes, and especially the delicate and invalid. An early breakfast of coffee has prevented the spread of fever in some bad climates. This should be the general rule, though there may be exceptions, where persons feel better for a good brisk walk before breakfasting.

The *Luncheon* is only admissible when the interval between breakfast and dinner is very prolonged, or when the food taken at breakfast is very trifling, as we so often see in the case of ladies. With those who dine late, a luncheon, about four or five

hours after breakfast, is both useful and necessary. It is a sort of light dinner.

Dinner should be taken five or six hours after breakfast; but if the breakfast has been very light, or the exercise great, food may be required sooner.

Tea, two or three hours after dinner, is an agreeable and refreshing meal, for, by that time, the food should have left the stomach, and the chyle should be entering the appropriate channels, when dilution is not only agreeable, but called for.

Supper is unnecessary to those who dine late, but to those who dine early, who take much exercise, or labor hard after dinner, supper is decidedly necessary.

At meals we should eat slowly, masticate thoroughly, and cease as soon as we feel satisfied, resolutely refusing to eat more. Our diet should not be too varied at one meal, for that leads to overburdening of the stomach, because the palate is stimulated, and the appetite provoked beyond its natural extent. After a full meal we should rest, but not sleep, for one or two hours, by which time the food will have been nearly all digested; and then moderate exercise is grateful, and demanded by nature, though the necessities of busy life in our new world seem to preclude people in general from devoting so much time to rest or moderate exercise.

The quantity of food required depends upon varying circumstances—age, labor, etc.; but, on looking around us, how painful it is to observe that while many of the poorer classes of society are unable, in times of dearth and scarcity, to purchase food enough to keep them from a lingering starvation, or, as in Ireland, from a rapid process of starvation, we find thousands of the wealthier classes, who actually eat themselves into premature graves, especially in the cities.

As school-boys, we have read of and wondered at the gluttony and extravagance of some of the Roman emperors—of Vitellius, with his four huge daily meals, with his accustomed vomit to enable him to eat the more. Yet, it is to be feared that, to a certain extent, and excepting this custom, modern parallels might be found. "Such men seem, like moral incendiaries, so to ventilate the lamp of life, as to fire away part of their microcosm with destructive inflammation, while others replenish it sparingly with the oil of temperance, and to them the flame burns steadily and shines to the end."

"It is not within the compass of human power to protract, in any sensible degree, the period of old age, properly so called; that is, the stage of decrepitude—'the sans teeth, sans eyes, sans taste, sans every thing.' In this stage of existence, the physical changes that successively take place clog, day by day, the vital machinery until it can no longer play. In a space of time, fixed within narrow limits, the flame of life must necessarily expire, for the processes that feed it fail. But though, when fully come, the term of old age can not be extended, the coming of the time may be postponed. To the preceding stage an indefinite number of years may be added; and this is a fact of deepest interest to human nature."—*Dr. S. Smith.*

If we are to believe in the accuracy of Virey, the Englishman consumes more meat than the inhabitants of other civilized countries. "The annual consumption of meat for each inhabitant of Spain," says Virey in his *Hygiène Philosophique*, is 22 lbs.; in France, 36 lbs.; in Paris, 86 lbs.; in Great Britain, 92 lbs.; and in London, 143 lbs.!"

There is a disorder, caused by repletion, which abridges hundreds and hundreds of persons of many years of their lives, and hurries them into the grave just at the very time when they think they are beginning to enjoy life. The practical physician is continually meeting with such cases. The symptoms are at first insidious, and occur in persons who have passed their fortieth or forty-fifth year. They come to cities, perhaps from the country, in a state of perfect health and activity, but with nothing in their pockets; they engage in business, encounter competition, work hard, and attain success after some twenty or twenty-five years. Now they ride where they used to walk; they eat and sleep well, and take little exercise. The stomach becomes of aldermanic proportions, perhaps, and the great veins within it become literally gorged with blood. The progress to destruction is sometimes checked by some inflammation being set up, demanding bleeding, purging, and lowering; or piles bleed freely, and a fresh lease of life, though probably a short one, is obtained; the same destructive habits are renewed, and, all at once, a fatal attack of apoplexy occurs. These cases are those comprised under the recent term of the pendulous abdomen or belly.

The writer, some years ago, lost a friend in this way, who was of middle age, and of full plethoric habit. The writer told him

that he must both eat less and take more exercise, or take physic or be sick. The patient took purging physic, which seemed to give temporary relief. Then a violent inflammation of the leg occurred, which lowered him for a very considerable time, during which no physic was required. When he recovered, and the old enemy was re-appearing, one of his sons advised him, during the writer's absence, to consult an eminent physician, who had a crotchet about latent gout. The poor fellow was treated accordingly with tonics, etc., and not long afterward the writer was summoned to his deathbed, for outraged nature could bear no more, and a fatal attack of apoplexy had supervened.

Now, this instance is not related to terrify, but to warn; and many need the warning—aye, will continue to need it. And when any gentlemen, of the age and habits described, begin to find their stomachs bowing out; when in the morning they wake with thick, furred, yellow, or yellowish-brown tongues, the breath foul; when they feel a sort of nausea in their throats, which will hardly bear the touch of the tooth-brush a little too near the gullet without exciting vomiting; when the stools are irregular or too scanty; when to these slighter signs are added disturbed digestion, with a full pulse, perhaps throbbing temples, perhaps giddiness and a flushed face, let them beware in time, and act accordingly; and, if they do, they may, indeed, have to check the gratification of their appetites, but, in return, they will probably live and enjoy life many years longer than they would otherwise have done.

Such persons should diminish the quantity of their food—should take two, three, or four active purgatives, at three or four days' interval, and should wear an abdominal belt; while they should take exercise pretty freely.

In such cases as these, the wet bandages—called by the German hydropathists *umschlags*—might be of service after the fullness of the abdomen has been reduced sufficiently. But this preliminary is indispensable.

We will now advert cursorily to the digestibility of different articles of diet, which will bring under notice the nitrogenous and non-nitrogenous articles, or those destined to keep up the function of respiration and the animal temperature. Animal food is more easily digested, and contains a greater proportion of nutriment, in a given bulk, than does farinaceous or herbaceous

food; but it is more heating and stimulating. Farinaceous food, as bread, rice, arrowroot, sago, or gruel, is also rapidly assimilated, and proves less exciting than animal food; but it affords less stimulus to the muscular coat of the stomach, and causes less vascular action in the mucous coat, wherefore its long-continued use impairs digestion and weakens the stomach, while it, at the same time, becomes a very suitable food where irritation in the stomach exists. Milk is digested as easily almost as farinaceous food, and is nearly as unstimulating.

Other kinds of vegetables are slow in undergoing digestion, and their fibrous portion passes out of the stomach, unchanged, into the bowels, there causing irritation often. They excite less, but they support less, and they often give rise to much acidity and flatulency.

Liquid food.—Soup is slow of digestion, often gives rise to acidity, and hence is unfit for dyspeptics. The fluid part must be first absorbed; wherefore the author always advises soup to be taken with bread crumbs, thickly thrown in, or else the soup must be thickened with rice, etc.

The fat of the body may be introduced into the system ready formed, or it may be derived from the digestion of starch, sugar, and analogous substances.

Man is an omnivorous animal, and requires both animal and vegetable food. Several alimentary principles are found in both animal and vegetable foods; but the nutritive principles of animal food are intermixed with a smaller quantity of non-nutritive substances than those of vegetable.

Vegetable food requires for its digestion more time, and probably greater power of the gastric organs, than animal food, and it is more apt to create flatulency and sourness. The lactic acid, or milk acid, is the source of this sourness, so troublesome to dyspeptics. This acid is so called because it exists in sour milk; and it is formed when various vegetable substances become sour, as when oatmeal is left in a large quantity of water. The alimentary principles which yield it are sugar, dextrine, (that is, starch gum,) and gum, and all these substances consist, chemically, of two atoms of carbon with ten, eleven, twelve, or fourteen atoms of water; but in order to convert them into this acid, an organic nitrogenized substance, which has been modified by exposure to the air, is necessary. Its influence is a

kind of ferment. Diastase, caseine, and animal membrane, (as that of the stomach,) when they have been exposed to the air, act as ferments. Thus sugary substances and milk produce lactic acid in a weak stomach; so will bread and beer, through the dextrine they possess. Oatmeal and the potato cause sourness by forming first dextrine, then lactic acid. Some of the fatty acids disagree often. The butyric acid from butter is very irritating. The facility with which butter becomes rancid depends on the presence of caseine, from which it is necessary to separate it if we want to preserve it; and this is done usually by fusion. New bread, rolls, fancy bread, cakes, rich plum cakes, and hot buttered toast should be prohibited. Good loaf bread, one day old, is the best; it may be toasted, and with even a little butter on it. When the ordinary loaf disagrees, an unfermented bread will often be of great service. It may be made in either of the two following ways: Of wheaten flour, 7 lbs.; carbonate of soda, 350 to 500 grains; water, $2\frac{3}{4}$ pints; muriatic acid, from 420 to 560 drops, or enough. Or this: Flour, 1 lb.; sesquicarbonate of soda, 40 grains; cold water, $\frac{1}{2}$ pint, or enough; muriatic acid, 50 minims; powdered white sugar, a tea-spoonful.

Mix well the soda, sugar, and flour, in a large basin, by means of a wooden spoon. Gradually add the water, with which the acid has been previously mixed, stirring constantly, so as to form an intimate mixture very speedily; divide into two loaves, and put them into a quick oven immediately. If any soda should escape the action of the acid, a yellow spot becomes visible, which is only unsightly.

Moldy bread (bread covered with fungi) has proved injurious. Rich cakes owe their indigestibility to the butter or lard which they contain; but cakes may be made by the unfermented process, like the bread. In this unfermented bread and cakes, there is a risk of the acetous fermentation, or of the decomposition of gluten.

All pastry is bad, from the injurious influence of heat on all oily, fatty substances—butter especially.

As to puddings, the most digestible is one made with bread, biscuit, and boiled flour. Batter pudding is not so easily digested, and suet pudding is highly objectionable; so are pancakes.

Of butcher's meat, mutton and beef stand first, boiled, roasted, or fried, and moderately well dressed. Young meats (lamb and

veal) are less digestible and nutritive than the older meats. Pork is not to be eaten by the dyspeptic, though pickled pork and bacon may.

Venison is highly digestible, but it is also highly stimulating. Rabbit's flesh is light, and easy of digestion.

Of birds, the white-fleshed, such as the common fowl, are best fitted for dyspeptics and invalids, because such meat is readily digestible, nutritious, and not too stimulating. They should be cooked by boiling, and eaten without melted butter. Game is richer and more stimulating, as the pheasant and partridge. The duck and goose, and all whose flesh is permeated with fat, are more difficult of digestion.

The white fish (as the sole and whiting) are light and digestible, and are well adapted for invalids and convalescents. They should be boiled, and eaten without melted butter. The whiting has been called the chicken of the sea. Salmon, eels, herrings, sprats, etc., abound in oil, and are objectionable on that account. Cured fish of all kinds are to be avoided.

Shell fish, too, are difficult of digestion, and should be avoided, excepting oysters.

Mealy potatoes, if well boiled or steamed, are digestible readily; but the cabbage tribe are uncertain, proving, even when well cooked—which it should always be—very indigestible, causing flatulence, etc.

Peas and beans, especially when old, are difficult of digestion, and they may cause flatulence; the older the worse they are.

The walnut, filbert, and almond contain oil, and are indigestible.

The grapes are the safest of the fleshy fruits. Apples and pears must be roasted. Ripe oranges are grateful and innoxious, and unripe ones give rise to griping pains in the bowels.

For drink, the dyspeptic should drink simple water, or toast and water. Some will be the better for weak table-ale, but malt liquor usually is apt to disturb the digestive functions, creating flatulence and acidity, when some sherry might be substituted, or very weak spirit and water.

Weak tea or coffee may be allowed, but chocolate and cocoa should be forbidden, on account chiefly of the oil which they contain.

Condiments should be sparingly used by the dyspeptic, for they stimulate; and, if in excess, they will irritate the stomach.

Of late a sect has sprung up, called the

VEGETARIANS,

who argue against the use of animal food in any form or quantity, and in favor of the exclusive use of vegetable aliment and water as the natural food of man. Many instances have been published by them of restored and improved health having resulted from vegetable food alone, where, too, all other means had failed. But the arguments in favor of exclusive vegetable diet are not based on sound physiology. As usual, where one-sided views are held, the most startling assertions have been made, without any proofs being adduced; and we are asked to believe what can not be admitted. The vegetarian advocate instances Hindoos, and others, who undergo great labor, while living solely on vegetables, and the tendency of such a diet to form a peaceable and inoffensive character is also boastfully pointed out, as exemplified in the Hindoo; and if the diet were the sole cause in operation, it would be a great recommendation; but it may be justly argued that the Irish peasant has been obliged, by poverty, to live for years on vegetables, yet they have committed as barbarous acts of cruelty and murder as the most carnivorous animals could do. These advocates point to the ferocity of the carnivorous beasts of prey, and ascribe it to the diet; whereas, the ferocity is an endowment from nature, to enable them to get their prey and kill it. As to the greater strength, derivable from vegetable food, we can not receive unsupported assertions, and must continue to believe that the mutton and beef-fed American will, *cæteris paribus*, be found stronger than he who lives on vegetables solely; and in the case of the Hindoo, we must recollect that he is allowed milk, which is a highly nutritious animal product.

A mixed diet seems pointed out by nature as the one best adapted to maintain a healthy tone and vigor, and we would earnestly warn many well-meaning individuals not to allow themselves to be captivated by plausible arguments; for if they happen to be of weak, delicate habit, they may not, probably will not, escape scatheless from the trial. It can not be doubted, that a change from an animal to a vegetable diet has been of great service to some of our citizens; and how has the benefit arisen? The habit of these gentlemen appears to be that of sitting down to the dinner-table exhausted with mental or bodily labor. They

bolt down a copious and often luxurious meal as fast as they can, and then they hurry off to business again. Can any one wonder at the appearance of indigestion among them? An irritable or sub-inflammatory state of the stomach is induced. This state is attended with a sensation of gnawing or craving, which is mistaken for the return of hunger, and more food is taken instead of less. If such persons become vegetarians for awhile, and eat nothing but vegetable farinaceous food, the stomach is soothed, its irritability appeased, and the change of diet has done great good.

But let the pregnant female, who never transgresses either as to quantity or quality of her food, and who is of delicate habit, indulge this vegetarian crotchet, and, most likely, she will do mischief to her own constitution, and either kill her baby, or else see it brought into the world a very small, puny, and sickly thing.

We will now speak, in a summary way, of drinks, alcoholic and others. Beer, or malt liquor, is a refreshing, salubrious drink, and seems to enable men to undergo much bodily fatigue, though the teetotaler contends that the water-drinker can do more than the beer-drinker. Beer does not contain much nutriment; but its cheering action on the system must not be overlooked. It contains less alcohol than wine, but more nutritive matter, and some bitter tonic, extractive from the hop. It should not be drunk by the sedentary and inactive. In convalescence it is often useful; but when the stomach is delicate, or the bowels relaxed, beer should be prohibited. Nor should the bilious or dyspeptic patient partake of it. In persons of full habit, and of apoplectic tendency, again, it should be avoided; also, when it causes headache.

Ales are richer in alcohol, sugar, and gum, than any other kind of malt liquor; but although they are more nutritive, they are not fitted for use, on account of their intoxicating, stupefying qualities. On some persons they act as purgatives. The pale ale, or Indian pale ale, is superior, because, having been carefully fermented, it is dry, and it contains a double proportion of hops. Porter is better adapted for table use than strong ale, only it is, unfortunately, so strongly adulterated as to be rendered poisonous. Three pounds of *cocculus indicus* to every ten quarts of malt is the proportion of poisonous adulteration which used to be usual in the trade. *Cocculus indicus* gave porter its inebri-

ating power; quassia, its bitter; grains of paradise and cayenne, its pungency; coriander and caraway, its flavor; liquorice, treacle, and honey, its color and consistence; while a mixture of green vitriol, alum, and common salt, called beer heading, gave a fine frothy or cauliflower head to beer.

Wine.—In this term we will not include the fermented juice of fruits generally, as of gooseberries, currants; etc., but we will restrict it to those wines which are obtained from the juice of the grape solely.

Every wine has a peculiar odor, called its bouquet or perfume, and which depends on the presence of some volatile principle generated during the process of vinous fermentation. The wines of warm climates possess no smell, says Liebig. Wines grown in France have it in a marked degree; but in wines from the Rhine, the perfume is most intense. The kinds of grapes which on the Rhine ripen late, or hardly ever completely, have the strongest perfume or bouquet, and contain much tartaric acid. It is evident that the perfume of wines and their acid have some connection, the acid influencing the bouquet.

Wines vary in the quantity of alcohol they contain. Those which contain but little of it, are called light wines, as claret, sauterne, hock, Moselle. The more generous wines are Lessa, Port, Marsala, Madeira, and Sherry. "The quantity of alcohol in them is modified by keeping them in casks or bottles. Madeira and sherry, kept for a moderate term of years, become somewhat stronger, the sugar in them becoming slowly converted into alcohol, while tartar is deposited. When all the sugar has disappeared, the formation of alcohol ceases, and the wine diminishes in strength from this period, partly by evaporation of the spirit through the cask, and partly by its conversion into other substances, as acetic acid."

Some wines contain much sugar, as Tokay, Tent, Frontignac, Lusel, Rivesalte, Constantia, and Malmsey. The process of fermentation has been arrested in these wines before all the sugar was decomposed. In dry wines, as in sherry, all the sugar has been decomposed.

Wines contain acid, more or less. In old and spoiled wines, this acid is the acetic acid. In the brisk, frothing, sparkling, or effervescent wines, it is carbonic acid; in port it is tannic acid. Some contain cream of tartar, also coloring matter.

The tartar of wines is bitartrate of potash, or cream of tartar, and it is deposited from wine along with coloring and extractive matters, both in the cask and bottle, forming what has been called argol—the crust, the bee's wing—and the deposit augments with the formation of alcohol.

Beer differs from wine in containing less alcohol, but more nutritive matter, and, in addition, a bitter tonic extractive derived from the hop.

Wine moderately used (a couple of glasses, or three or four daily), proves a grateful stimulant; but it is a valuable restorative when the mind and body has been enfeebled or exhausted. It is fitted for those who live a life of activity, and not for the indolent and sedentary. Still, the most perfect health is compatible with total abstinence from wine; and it is far better to do without wine, except when wanted as a medicine, than it is to drink it, however moderately, because a habit is soon engendered. The abuse of wine brings on many disorders, which are too well known to require enumerating here.

Wine produces different effects on the system from those caused by spirits. Wine exerts a tonic influence, spirits do not; wine stimulates more slowly, and the stimulus subsides more slowly, than in the case of spirits, wherefore wine is the better tonic for convalescents. Diseased liver and delirium tremens are caused by excess in spirit-drinking; not so, or very rarely so, in wine. But wine favors gravel and gout. Wine-drinkers are fat, lusty, plethoric; spirit-drinkers are generally thin and emaciated. The intoxicating influence of wine is not equal to that of corresponding mixtures of spirits and water. Old wines are less intoxicating than new ones, because the alcoholic strength is lessened.

Sweet wines are improper for the dyspeptic, and also in some urinary diseases, as diabetes. Acid wines are improper for the gouty and rheumatic. Old wines are preferable to new. Good dry sherry is a good dietetical wine. Five kinds of sherry used to be quoted: Very pale, pale, golden, brown, and very brown. Pale sherry was once the fashion, and the wine was nearly spoiled; for the wine-growers, to meet the demand, made their wines before the grapes were ripe. The gouty, those troubled with uric acid (red deposit in their urine), or acidity of stomach, should drink sherry.

Of all the wines produced in the United States east of the

Rocky Mountains, the Sparkling Catawba is the best. The Still Catawba is a good wine, in many cases equal to the sparkling; and there is now coming into use the Ives's seedling wine, which has justly a very high character, while new kinds of native wines are being constantly introduced as the cultivation of the grape becomes more extended in the country. There is, however, some difficulty in getting these wines in a pure state; still, they can be obtained in a less adulterated condition than any of the foreign wines. The wines of California are among the best in the world; but it is to be feared that wines of that name are manufactured east of the great range of mountains. We mean those sold in the eastern United States.

Port Wine.—Old Port is of a duller brown, paler tint than new Port, which has a more purplish, redder, deeper, and far brighter color; and small silver dishes, with raised bottoms, are the tasters employed in the trade to show this color. Port is more apt to disorder the head and stomach than sherry, and also to constipate the bowels. It is more resorted to when there are relaxed bowels; and it is supposed to be more strengthening than other wines.

Madeira is stronger and more acid than sherry. Brandy is usually added to it before it is shipped, and its voyage to the East Indies improves its quality by the heat and agitation during the voyage. This wine is well adapted for old persons and debilitated constitutions, and it is a very good wine for invalids, where its acidity is not likely to disagree.

Champagne is divided into the red or pink, and the white; also into the still and the sparkling. Of the still kind, the Sillery is the best; of the sparkling, the wine of Ay is preferred; and the demi-mousseux, which only creams on the surface, is often preferred to the full-frothing, the grand-mousseux. The effervescence depends on an evolution of carbonic acid gas.

If carbonic acid gas be condensed into ordinary white wine, it usually renders the latter turbid, owing to the precipitation of the gliadine, (gliadine is usually found combined with gluten, and is contained in the wine,) but if we previously precipitate the gliadine by adding tannin, the turbidity may be prevented.

Champagne exhilarates and quickly intoxicates, and it is diuretic. It is fitted for nervous people, and depressed spirits, but it is apt to occasion headache. It is useful to allay vomiting; it is

objectionable in gouty subjects. The German wines from the Rhine and the Moselle are light, and have a powerful bouquet; they contain tartrate of alumina and potash. The inferior kinds are naturally acid; not so the superior. These wines are extremely durable.

The Johannisberger stands at the head of the Rhine wines. Its flavor and perfume are very choice, and there is a total want of acidity. Steinberger, Rudesheimer, Hockheimer, etc., follow in rank. The term Hock (an abbreviation of Hockheimer) is applied to the first growths of the Rhine. The inferior Rhine wines are called Rhenish wines.

The Schartzberger is the most esteemed of the Moselle wines. The German wines, when of good quality, are light and wholesome, but are objectionable on account of their acidulous character. They prove diuretic and slightly aperient; and as they hold tartar in solution, Liebig asserts that crystals of uric acid are never deposited from the urine under their use.

Claret Wines come from the neighborhood of Bordeaux. Lafitte, Latour, Châteaux-Margaux, and Haut-Brion are the different kinds. They are light and wholesome wines, but they are objectionable for those who suffer from gout, rheumatism, or indigestion.

Burgundy is a stimulant, and rather astringent; it is apt to occasion headache or indigestion.

Ardent Spirits.—The value of these is proportionate to the alcohol they contain. The spirit called proof-spirit at present, by Sike's hydrometer, should have the specific gravity 0.920 at 60° of Fahrenheit. Any heavier spirit is under-proof; lighter is overproof. Formerly the proof of spirits was thus made: The spirit was poured upon gunpowder in a dish and inflamed. If, at the end of the combustion, the gunpowder took fire, the spirit was said to be above or over-proof, but if the spirit contained much water, the powder was rendered so moist that it did not take fire; in this case, the spirit was below or under-proof. But this mode of proof was open to errors, and proof-spirit is now defined to be such, that at the temperature of 51° Fahrenheit thirteen volumes of it weigh as much as twelve volumes of water, and such a spirit consists of

	By Weight.	Specific Gravity.
Alcohol.....	49	0.791
Water.....	51	1.000

Brandy.—The Cognac and Armagnac brandies are the best. Pale brandy has a brownish yellow tint; the high-colored is artificially colored. Ten per cent. under proof is what is usually sold.

It is cordial and stomachic—relieves spasmodic pains, wind in stomach, checks vomiting; useful in some cases of indigestion, with pain after taking food. Warm brandy and water, and nutmeg and burnt brandy, are useful in diarrhea.

The U. S. "Pharmacopæia" has admitted an excellent restorative mixture in cases of typhus and putrid fevers, etc. It consists of brandy and cinnamon water, four ounces of each, the yolks of two eggs, half an ounce of white sugar, and two drops of oil of cinnamon. Two or three table-spoonfuls in all cases of exhaustion from low fevers, floodings, discharges of blood, etc.

Rum.—General effects similar to those of brandy. But rum is considered more heating, more likely to cause sweating; wherefore it is often given in slight colds, coughs, and rheumatism. It has been found of great value when sailors and others have had to suffer privation and exhaustion. This is sold 10 per cent. under proof generally.

Gin.—Not allowed to be sent out stronger than 17 per cent. under proof; but is usually sold to the trade at 22 per cent. under proof.

Gin is powerfully diuretic, on account of its oil of Juniper; it is, therefore, given in dropsies, and also to promote menstruation.

Whisky is a corn spirit, and agrees with gin in most of its properties. The smell of burned turf, called peatreek, has been imitated by impregnating bad raw grain whisky with peat-smoke; so this is no longer prized as a criterion of good whisky. Highland whisky is often 11 per cent. over proof, and the whisky of the Lowland distillers is not considered so good as that of the Highland, because the former, the Lowland distillers, use porter yeast in their distilling. There is a vast deal of very bad whisky sold in the United States, much of it being a villainous compound instead of pure liquor. A good article of Bourbon or rye whisky can occasionally be obtained, but great care should be exercised in selecting it for medicinal purposes.

Arrack, or Rack, has been called rice spirit, being distilled from fermented infusions of rice, or cocoa-nut toddy. Pine-apples

steeped in it, give it an exquisite flavor, and, by age, it becomes a delicious liquor, unrivaled for making nectarial punch. It possesses stimulating and narcotic properties beyond other spirits. A mock arrack is made by dissolving twenty grains of benzoic acid in two pints of rum.

Of the various liquors, the Ratafias, the Cremes, the Kirschwassers, Maraschino di Zara (from a peculiar cherry, the marasquin), the Curacoa may be mentioned. The various British liquors need not be detailed; their specific gravity runs from 64 to 80 under proof.

We will now shortly advert to the question whether alcoholic drinks are permissible, or likely to be beneficial.

Alcohol has been classed among the elements of respiration; for, when drank, it is absorbed, gets into the system, and is converted into the carbonic acid and water appearing in the expired breath. By its oxidation in the lungs, it must evolve caloric, and when used in moderation, it serves to support the temperature of the body; and the teetotal societies have never discussed alcohol under this point of view. But, though alcohol evolves heat in burning, it is an obnoxious fuel; its volatility, and the facility with which it permeates membranes and tissues, enable it to be rapidly absorbed, and when it gets into the blood it exerts on the brain and liver a most injurious operation before it is burnt in the lungs. By its combustion, heat is evolved; yet, under certain circumstances, there are other better, safer, and less injurious combustibles to be burned in the vital lamp. Alcohol has been detected in both brain and liver of those who have died under its influence, and it doubtless exerts some topical action on these organs. The immediate prejudicial influence spirits exert on the coats of the stomach, has been rendered visible in Dr. Beaumont's case of the wounded Canadian voyager, the coats of whose stomach, after drinking, showed diseased color, patches of ulcers, and an inflammatory redness all over it; yet the man himself had no warning symptoms of such a state, which adds to the danger of such a case.

Where general health is perfect without alcoholic drinks, they ought never to be taken, for they are sure to cause excitement, and excitement is always followed by a corresponding depression. Sir J. Richardson, the Arctic traveler, says spirits give a temporary stimulus, but they diminish the power of resisting cold.

He says a Canadian, with seven or eight pounds of beef or venison in his stomach, will resist the greatest degree of natural cold in the open air, and thinly clad, too, if there be no strong wind. "We found, on our northern journey, that tea was much more refreshing than wine or spirits, which we soon ceased to care for, while the craving for tea increased." A cup of warm coffee, or a basin of hot soup, may answer the purpose of alcohol, and be more permanent in their effects. Many facts are now on record to show the advantage of discontinuing spirituous drinks, as well as of living without them under most of the circumstances of ordinary life. Still, there are circumstances when wine or spirits may be advantageously taken, which may then be regarded as medicines, adapted for a temporary state; as, for instance, when we have no means at hand for warming coffee, etc., and when chilliness is upon us, which, if unchecked, may lead on to the reaction of inflammation. Again, where the constitution or health is so deficient, or the exertions required by the mode of life are so great, that the system can not be sustained in proper vigor without some additional stimulus. But when fermented liquors quicken the circulation, excite the mind, or disorder the digestive functions, they are evidently to be avoided, for they will be sure to do harm.

Many assert that excessive use of spirituous liquors predisposes and has given rise to spontaneous combustion in the human body; that the textures in the bodies of habitual drunkards have become so universally imbued with inflammatory gases, that under certain circumstances the galvano-electric fluid in the body sets fire to the body, which burns away into an oily, greasy, tarry, fetid, sooty ash—the sole remnant of what was once a living, moving being, the abode of mind, and the inclosure of a soul, which should be immortal. However much one might desire to warn the drunkard and deter him from his debasing habit of drinking, by pointing out to him the probability of a similar fate, and however poetical and awfully deterring such a just retribution for the suicidal practice of habitual intoxication may appear, still we can not do so with truth, for the cases of spontaneous combustion are not proved.

SPONTANEOUS COMBUSTION

of the human body was supposed to have occurred in the year 1725, when the first recorded case took place. A miller's wife, at Rheims, was found burned in her kitchen; and all the remains left consisted of some parts of the head, the legs, and the vertebrae. The miller had a pretty servant-girl, and suspicion was aroused—a criminal inquiry instituted; but the man was acquitted on the ground of spontaneous combustion. Now, in those days, the true theory of combustion was not known, and the conditions necessary for continued combustion had not then been discovered.

Since that time, from forty-five to forty-eight cases have occurred, of which the great majority agree in the following points: 1. They took place in winter. 2. The victims were brandy-drinkers, in a state of intoxication. 3. They happened where the rooms are heated by fires in open fire-places, and by pans of glowing charcoal, in England, France, and Italy. In Germany and Russia, where rooms are heated by means of closed stoves, cases of death, ascribed to spontaneous combustion, are exceedingly rare. 4. It is admitted that no one has ever been present during the combustion. 5. None of the physicians who collected the cases, and attempted to explain them, has ever observed the process, or ascertained what preceded the combustion. 6. It has never been ascertained, invariably, how much of combustible matter was on the spot. And, lastly, it is unknown how much time had elapsed from the commencement of the combustion to the time when the consumed body was found.

Flesh is not combustible till dried; and then it is not combustible by itself, like wood. Living flesh can not burn; nor does steeping it in fat or spirits render it combustible; and all nitrogenous compounds are comparatively incombustible.

Some advocates have supposed the generation of phosphureted hydrogen in the human body. Such a gas will take fire instantly on coming into mere contact with the air; but the presence of such a gas in the human body has never been observed, either in health or disease, nor even in the putrefaction of dead bodies; and, moreover, the human body contains no phosphorus in such a state as to yield, by any process during life or after death, phosphureted hydrogen gas. Besides, such a gas as this is

poisonous as arsenic, and could not be present in the blood of any living animal.

The circulation of the blood in the living body renders its spontaneous combustion absolutely impossible. Dry animal substance, such as flesh, is not in itself difficult of combustion. Indeed, up to the charring point, it is easily combustible, as may be seen in a piece of horn, or in shavings of horn; and flesh *dried* behaves exactly as horn does. But all these tissues and textures become difficult of combustion in consequence of the water they contain in a fresh state, amounting in the flesh to 75 parts, and in the blood to 80 per cent.; and the water is contained as in a sponge with very fine pores. It can not be heated beyond 212° of Fahrenheit, the boiling point, whereas even fat requires a temperature of 800° of Fahrenheit before it will burn. The accounts transmitted to us have been at first from ignorant persons; and in their credulity and eagerness to substantiate the cases, they usually state that the body entirely disappears down to a greasy stain on the floor, and some remains of bones. This is impossible. The smallest bit of bone, in the fire, becomes white, and loses somewhat of its bulk; but of its weight, there remains from 60 to 64 per cent. of earthy matter, commonly retaining the form of the original bone.

Those who are interested in this question of spontaneous combustion had better read the familiar Letters on Chemistry, by Baron Liebig, from whose pages the above written statements are taken; and they may rest assured that, in all such cases, if the true evidence can be got at, it will probably be found that a man goes to bed drunk, and, in looking for any thing under the bed, may leave his candle burning; or he may so leave it that it sets fire to the curtains or coverings of his bed—the drunkard becomes asphyxiated, and soon lies a charred corpse. But if we wander into gaseous and electrical theories to account for what is simple enough, the wildest and most startling assertions must be swallowed, without an atom of proof.

We may regret the loss of a terribly warning example to deter from drunkenness; but quite enough remains to deter any one from drinking, in the shape of the inward burning which takes place from disease of the liver and stomach, and which deprives the unfortunate victim of drunkenness of all the enjoyments of life.

COOKERY FOR THE SICK AND CONVALESCENT.

As to boiling, roasting, etc., something has already been said; but we may here add, that in boiling much depends on the manner of conducting the process. If the boiling be too quick, the digestibility of the meat is diminished, the albuminous matter is coagulated, the flesh on the outside rendered hard, and the interior not sufficiently done. The water should scarcely be brought to the boiling temperature, but kept simmering. Every kind of meat for invalids, except poultry, should be put on the fire in cold water, and very slowly boiled.

Beef and mutton boiled in hard water is always more tender and juicy than when soft water is employed—the solvent properties of the water increasing, probably, with its density. Fish, however, is rendered firm in the ratio of the hardness of the water in which it is boiled. Fish boiled in sea water, or in water containing much salt, will be found firmer and finer flavored than if boiled in soft water, or water without any salt added.

Vegetables require rain or soft water, adding some salt; they should always be well, indeed thoroughly, boiled in two waters.

Stewing is a good form of cookery for the convalescent and the invalid.

Baking is inadmissible, except certain puddings.

Roasted meat is more nutritive than boiled meat, if properly and exactly done; but it is less easily digested. Mutton loses one-fifth, and beef one-fourth, of its weight by boiling; but both lose only one-sixth in roasting. Underdone roasted meat is not well adapted for weak stomachs, as we have before said; this is an error generally entertained. The digestibility of the meat is in the ratio of the softness of the fiber, and that property is increased by slow boiling.

Frying and broiling should be banished from sick-room cookery.

COOKERY FOR THE SICK-ROOM.

This comprises farinaceous preparations, animal teas, broths, milk, and drinks.

Farinaceous preparations are modifications of starch. They are not capable of conveying much nourishment into the habit; but, being mild and devoid of stimulant properties, they are well calculated for the sick.

Arrowroot Mucilage.—Rub a table-spoonful of the arrowroot powder, with a little cold water in a basin, by means of the back of a spoon, till it is well mixed; then pour boiling water over it till a soft, tenacious, gelatinous mucilage is formed; lastly, boil for five minutes. This quantity of the powder will make a pint. Sugar may be added, or lemon-juice; but cinnamon powder, or any astringent, precipitates the starch, and destroys the smoothness of the mucilage. If wine is added, do not add Port wine.

Tous les Mois.—A starch prepared from the tubers of a species of canna, in Peru. It is the same as arrowroot, and prepared in the same way. They both convey but a small quantity of nutriment into the system, and hence they are useful to satisfy prejudices, in affording the semblance of providing nourishment, when it is not wanted, or might prove injurious.

Mucilage of Sago.—Sago is the pith of palms and cycadæ in tropical climates, as at Malacca. Pearl sago, the best, contains starch and some salt. An ounce, or a table-spoonful of it, should be placed in a pint of water in a pan, placed on the hob, or on a hot plate, for two hours; then boil for fifteen minutes, stirring well all the time. It may be sweetened with sugar, or flavored with lemon-juice; or milk may be added. It affords very little nourishment, and may be given to invalids laboring under acute diseases.

Tapioca Mucilage.—Tapioca is the pith of the roots of *jatropha manihot*, in Brazil, and is combined with a poisonous principle in the first state; yet is easily freed from it by washing in cold water, after the roots are barked and crushed. The fecula is then dried and granulated. It resembles sago; but it is less colored, and its grains are larger. The mucilage is prepared and flavored in the same way as sago; only as it is more soluble than sago, it requires only half the time for maceration and boiling.

Infants, about the time of weaning, relish this tapioca more than any thing, and it is less apt to become sour during digestion than even arrowroot or other farinaceous food.

Mucilage of Salep.—Salep is prepared from the bulb of the orchis mascula. It comes from the Levant and India, and consists of a gum termed bassorin and fecula. It is more nutritive than either arrowroot or sago, and is better adapted for the convalescent than the sick. The mucilage is prepared by dissolving the powdered salep in hot water, with assiduous stirring, and

adding to the solution sugar and milk. Salep and flour is said to make excellent bread.

Grit Gruel.—Wash well three ounces of grits (grits are oats freed from their cuticle or testa, and coarsely broken) in cold water; pour off the fluid; put them into four pints of fresh water; boil slowly till reduced to one-half; strain the whole through a sieve, to separate the mucilage from the undissolved part of the grits.

Oatmeal Gruel.—Rub two ounces of oatmeal, free from mustiness, in a basin, in a small portion of a pint and a half of soft water; pour off the fluid after the grosser particles have subsided, but while the milkiness still continues, and repeat this operation till no more milkiness is communicated to the waters. Put the washings into a pan, stirring well, to suspend any fecula which may have subsided, and boil till a soft, thick mucilage is formed.

The gruel of grit and of oatmeal consist not only of the starch of the oat, but contain also a small proportion of gluten, wherefore they are more nutritious than any of the feculaceous mucilages. They may be sweetened or acidulated, or mixed with milk, according to circumstances. Some add butter and honey, which are inadmissible in inflammatory diseases. Gruels are convenient vehicles for clysters, as they are not so susceptible of precipitation by astringent vegetables or decoctions as the purer starches are.

Gruel is apt to ferment if kept longer than twenty-four hours.

Mucilage of Iceland Moss, or Jelly.—This contains a bitter, and if we wish to remove the bitter, the dried lichen must be pounded, and soaked for twenty-four hours in tepid water, containing a small quantity of carbonate of soda, and forcibly pressing through a coarse cloth; if bitter still remain, repeat the process.

To make the jelly, put an ounce of the dried moss to a quart of water, slowly boiled down to one-half; strain through a sieve; sweeten, acidulate, or add milk, as you may desire. The bitter should be retained, if we wish to obtain the utmost possible good from the moss.

Carrageen, or Irish Moss.—This is a fucus. Boil an ounce in a pint and a half of water; add sugar, acid, or milk, and the jelly is excellent to support the invalid's strength.

Mucilage of Rice.—Wash an ounce of good Carolina rice, and macerate it in a quart of tepid soft water for three hours, in a pan, placed on a hob; then boil the whole slowly for an hour, and strain through a sieve.

Sugar, acid, or milk may be added as usual; and this forms an excellent diet in irritable conditions of the bowels and in diarrhea, but it is quite a mistake to suppose that it possesses any astringent property. An hundred millions of the inhabitants of this earth live upon rice; but they add milk to their diet. Rice is not very nutritious. Its soluble part is chiefly starch, eighty-five in one hundred parts. There are $3\frac{1}{2}$ per cent. of an animalized principle and some phosphate of lime. The animalized matter furnishes whatever nutriment there may be in rice; but in the mucilage this animalized principle is not taken up.

Ground Rice Milk.—Rub a table-spoonful of ground rice smooth with a pint and a half of milk; add half an ounce of candied lemon-peel, cut into small pieces; boil for half an hour, and strain while the milk is hot.

This is an excellent nutritious beverage for the sick, when strict abstinence is not required. It is well adapted for early convalescence.

Simple Bread Panada.—Put any quantity of grated stale bread into water enough to form a moderately thick pulp; cover it up, and leave it to soak for an hour; then beat it up with two table-spoonfuls of milk, and a small portion of refined sugar; boil the whole for ten minutes, stirring all the time.

This is useful whenever strict abstinence is not enjoined.

ANIMAL PREPARATIONS.

Hartshorn Jelly.—Cut six ounces of hartshorn shavings into small pieces; boil them in four pints of water down to two; strain, and add to the liquor, while hot, two table-spoonfuls of lemon-juice, six ounces of white sugar, and two glasses of sherry. This is good nutriment when wine is not forbidden. Or, instead of the acid and wine, milk in equal quantity may be added, and may be given as a substitute for breast milk to infants brought up by hand.

Beef Tea.—Cut half a pound of lean rump-steak into thin slices; sprinkle a little salt over them, spread out in a hollow dish, and pour a pint of boiling water over them; cover the dish

and place it for an hour near the fire; then put the whole into a pan, cover it, and boil for a quarter of an hour; then strain through a sieve. The resulting beef tea is very strong, and may be reduced by adding boiling water.

Chicken Tea.—Free a small chicken from fat and skin; divide it in two halves, longitudinally; remove lungs, liver, and all from backbone and ribs; then cut it, bones and muscles, into as thin slices as possible; put all into a pan with some salt, and pour a quart of boiling water over them; simmer slowly for two hours; put the pan on a hob for an hour, and strain.

Farinaceous additions may be made.

Veal Tea.—Made as beef tea is. A pound of fillet of veal, freed from fat, and sliced; a pint and a half of boiling water; and boil for half an hour. The fleshy part of the knuckle of veal will do instead of the fillet. Strain; the decoction becomes a jelly; and in small cups will keep for several days, and may be used by adding an equal quantity of boiling water to a cupful of it at any time.

Mutton Tea.—A pound of mutton, freed from fat, and in slices, to a pint and a half of boiling water; let it stand to macerate; then boil for half an hour, when it may be strained.

An ounce of good pearl barley, washed and macerated in boiling water for an hour, may be boiled with the mutton tea, and the undissolved barley separated by straining.

Turtle Soup.—Plain turtle soup made from the green turtle, without wine or spices, is sold in pots, and wants only the addition of water to make a soup very nourishing and easy of digestion. It should be given only in small quantities, at moderate intervals. Wine or brandy may be added, if demanded by circumstances.

Toast Water.—Toast to a brown, not to a black cinder color, half a slice of a stale quartern loaf; put it into a jug, and pour a quart of water over it, which has been boiled and cooled; decant after two hours. Orange and lemon-peel put in with the bread is a grateful addition.

Apple Tea, or Water.—Slice two large apples, not over ripe, and pour a pint of boiling water over them; after an hour decant the liquid and add sugar.

Lemon-peel Tea, or Water.—Pare the rind of one lemon, which has been previously rubbed with half an ounce of refined sugar;

put both peelings and sugar into a jug, and pour over them a quart of boiling water. When cold, pour off the liquid, and add one table-spoonful of lemon-juice; and a glass of sherry added, or instead of the lemon-juice.

Orgeat.—Two ounces of sweet almonds, and four bitter almonds blanched, are to be beaten in a mortar, with a little orange-flower water, into a paste; rub this with a pint of milk, diluted with a pint of water, until an emulsion is formed; strain and sweeten with sugar or capillaire.

Raspberry Vinegar Water.—This is diluted raspberry vinegar.

Lemonade.—Add the juice of two lemons to a quart of boiling water, having the rind of one of the lemons in it, in a covered jar; sweeten moderately with sugar or capillaire.

Barley Water—Simple.—Two ounces and a half of pearl barley to four and a half pints of soft water; wash the barley with cold water, then pour upon it half a pint of water, and boil for fifteen minutes; throw this water away; then, having heated the remaining four pints, pour them upon the barley, and boil down to two pints, and strain.

Compound Barley Water.—To two pints of simple barley water, add two and a half ounces of figs, sliced; five drachms of liquorice-root, sliced and bruised; two and a half ounces of raisins, and a pint of soft water; boil down to two pints, and strain.

These are good demulcents when blisters are troublesome, and in urinary disorders. An ounce of gum added and dissolved is a good addition, when there is pain or difficulty in making water.

Simple barley water, with an equal quantity of milk and some sugar, is a good substitute for the breast milk.

Almond Emulsion.—Beat one ounce and a quarter of blanched sweet almonds and five drachms of sugar into a pulp, in a porcelain mortar, and add water gradually until a quart is added; then strain through linen. A good demulcent in fevers.

Marsh Mallow Tea.—Four ounces of dried roots of the marsh mallow, two ounces raisins freed from the seeds, and five pints of boiling water. Boil slowly down to three pints; let the sediment subside; pour off the clear liquor. Useful in gravel diseases.

Linseed Tea.—One ounce of linseed, not bruised; two drachms of liquorice-root, bruised; one pint of boiling soft water; place the jug containing these on the hob, covered, for four hours; strain through linen or calico.

The mucilage resides in the husks, and the fixed oil in the kernel of the linseed, wherefore the seeds ought not to be bruised.

When linseed is boiled, the fixed oil is extracted, and renders the decoction nauseous and unpleasant.

Useful in coughs; gravel disorders. It must be made daily, as it soon gets ropy and spoils.

Rennet Whey.—Infuse a moderate-sized piece of rennet in a sufficient quantity of boiling water to extract the soluble matter; separate the fluid, stir a table-spoonful of it into three pints of milk, cover up with a clean cloth, and place it before the fire till it forms a uniform curd. Divide this curd with a spoon, and press it gently so as to separate the whey. Nutritive and diluent. Whey constitutes 92 parts in every 100 of milk.

Rennet is the inner membrane of the calf's stomach; it coagulates milk by a peculiar substance, called chymosine. The quantity of liquid rennet necessary to curdle 1,000 grains of milk is only eight drops; but it requires a heat of 68° Fahrenheit, and its action is aided by the acidity of the rennet.

Vinegar and Tamarind Wheys.—A small wine-glassful of vinegar, sweetened with a dessert-spoonful of muscovado sugar, or else two table-spoonfuls of tamarinds, stirred in a pint of boiling milk; boil for fifteen minutes, and strain.

White Wine Whey.—Add to two-thirds of a pint of milk enough water to make up a pint. Take two glasses of sherry, or any other good white wine, and a dessert-spoonful of muscovado sugar; place the milk and the water in a deep pan upon the fire, and watching the moment when it boils, which is known by a scum rising to the edge of the pan, pour into it the wine and sugar, stirring assiduously while it continues to boil, for twelve or fifteen minutes; strain the whey through a sieve.

In low fevers, when wine is wanted in small quantities, this is a good mode of administering it; it may be drank cold or tepid in a wine-glassful at a time.

Mustard Whey.—Boil together half an ounce of bruised mustard seeds and one pint of milk; boil them together till the milk is curdled, then strain. Give a tea-cupful at a time in dropsy; it stimulates the kidneys and augments the urinary organs.

Artificial Goat's Milk.—Cut an ounce of fresh suet into small pieces; tie them in a muslin bag, large enough to hold the pieces

without compression; boil this in a quart of cow's milk, sweetened with a quarter of an ounce of sugar-candy. This is useful in scrofula, in atrophy, in consumption, and for infants brought up by hand.

Artificial Asses' Milk.—Dissolve half an ounce of gelatine, by heat, in a quart of barley water; add one ounce of refined sugar; pour into the mixture a pint of new milk, and beat up with a whisk. It should be drank warm, and exercise taken after it.

Milk and Soda Water.—Heat, nearly to boiling, a tea-cupful of milk; dissolve in it a tea-spoonful of refined sugar, put it into a large tumbler, and pour over it two-thirds of a bottle of soda water.

Useful to give milk when there is acid in the stomach.

Buttermilk.—Put a quart of new milk into a half-gallon bottle; cork the bottle, and cover it with a towel in such a manner that, by drawing alternately each end of the towel, the bottle can be rolled upon a table. Open the bottle while rolling, occasionally, to admit air; when the butter has separated, pour off the milk. A nice cooling beverage in fever, or in states of excitement.

Sago Posset.—Boil two ounces of sago in a quart of water, till a mucilage is formed; then rub half an ounce of loaf-sugar on the rind of a lemon, and put it, with a tea-spoonful of tincture of ginger, into half a pint of sherry; add this to the mucilage, and boil for five minutes. An excellent cordial in debility, after acute diseases. Dose: a large wine-glassful every four or five hours.

COOKERY FOR THE CONVALESCENT.

Boiled Flour and Milk.—Knead wheaten flour into a ball, with water, and tie firmly in a linen cloth; put it into a pan, with water, and boil for twelve hours. Place it before the fire to dry, and, on removing the cloth, separate a thick skin or rind which has formed, and again dry the ball. A table-spoonful or more of this, grated, and boiled with a pint of milk, forms an excellent article of diet in convalescence from dysentery, diarrhea, and emaciations.

Arrowroot Pudding.—Rub a table-spoonful of arrowroot powder with a little cold water, in the same way as in making the mucilage; and add to it, while constantly stirring, a pint of boiling milk with this mucilage; mix the contents of one egg, and two or three tea-spoonfuls of powdered, refined sugar, previously beaten up together. Bake or boil this pudding in a basin.

A table-spoonful of Scotch orange marmalade may be added to this pudding, if desired.

Arrowroot Blanc-mange.—Make arrowroot mucilage with three times the quantity of the arrowroot powder; add milk in a moderate proportion; boil down to a sufficient thickness; pour it into a shape, and set; then turn it out. This may be eaten with currant jelly or with wine, or lemon-juice and sugar. It is sometimes eaten with cream, but cream is improper for convalescents.

Milk, or Beef Tea Arrowroot Mucilage.—Make, as in simple arrowroot mucilage, except that beef tea or milk boiling is used instead of water; and the mucilage must be boiled twenty minutes instead of five.

Flummery, or Sowans.—Rub a quart or any quantity of grits, or of oatmeal, with two quarts of hot water for some time; then leave the mixture for several days to get sour; then add another quart of hot water, and strain through a hair sieve. Leave the strained fluid to deposit a white sediment (the starch); pour off the water, and wash the sediment with cold water. The washed sediment may be boiled with fresh water, stirring all the time it is boiling, until a mucilage or jelly is formed; or it may be dried, and afterward prepared as arrowroot mucilage is.

Flummery is light, very digestible, and moderately nutritious; and it may be eaten with milk or wine, or lemon-juice and sugar.

Oatmeal Porridge.—Sprinkle into a pint of water, kept boiling, small quantities of oatmeal, at short intervals, stirring all the time, until the mixture is thick enough; boil for another half hour. Eaten with milk, this is nutritious; but it does not suit the dyspeptic, as it is apt to prove acedent.

Rice and Apples, or Snow-balls.—Boil the rice in hot water rapidly; strain off the water through a colander; expose the rice for ten to fifteen minutes to the fire; and, having stewed the apples separately, mix the two with some sugar. This is more digestible than when a paste is formed. No butter should be added, and not much sugar.

Boiled Bread Pudding.—Grate half a pound of stale bread, pour a pint of hot milk over it, and leave it to soak for an hour in a covered basin; then beat up, with the yolks of two eggs; put the whole into a basin, tie over, and boil for half an hour. Salt or sugar, or a glass of sherry, may be taken with it.

Simple Rice Pudding.—Simmer two table-spoonfuls of Carolina rice in a pint and a half of milk, till the rice is soft; add the contents of two eggs, with half an ounce of sugar. Bake for three-quarters of an hour in a slow oven. Two glasses of sherry are sometimes added.

Macaroni or Vermicelli Pudding.—Simmer two ounces of macaroni or of vermicelli, in a pint of milk and two ounces of cinnamon-water, till the macaroni is tender; then beat up the yolks of three eggs, the white of one, an ounce of sugar, one drop of the oil of bitter almonds, and a glass of sherry, in half a pint of milk. Add the mixture to the macaroni or vermicelli, and bake in a slow oven.

Batter Pudding.—Beat the yolks of two eggs with half an ounce of sugar, and mix them with a table-spoonful of wheaten flour and a pint of milk; put the pudding into a basin, tied over, in boiling water.

Tapioca Pudding.—Beat the yolks of two eggs and half an ounce of sugar together, and stir the mixture into a pint of tapioca mucilage made with milk. Bake in a slow oven.

Sago, arrowroot, or millet-seed mucilage may, in like manner, be made into puddings.

Mashed Carrots and Turnips.—Boil the carrots and turnips, peeled, successively in three waters; press the water strongly out of them, through a clean, coarse cloth; mash them together with enough new milk to form a pulp, and season with salt; place them before the fire till the surface seems dry.

This is an admirable dish for convalescents, and one they do not readily tire of when restricted to farinaceous vegetable diet.

Plain Boiled Vegetables.—All the cabbage tribe, turnips, carrots, and onions should be thoroughly boiled in two waters. If salt be added, and the boiling be brisk, in an uncovered vessel, the vegetables will retain their green color.

ANIMAL PREPARATIONS.

Rice, or Vermicelli, or Macaroni Soup.—Make a quart of beef tea, as before ordered, and boil down one-third; then add an ounce of vermicelli, or two ounces of macaroni, which have been previously well boiled in water, and boil down the whole to one pint; salt to taste, and add five grains of cayenne pepper to each pint. When rice is used instead of vermicelli, it should be

put into boiling water, and boiled rapidly in a close vessel; then thrown into a colander and dried before the fire; it should not be boiled with the soup, but added after the concentration of the soup, in quantity to taste.

Chicken Broth.—Boil down chicken tea one-half; add a little parsley or celery, and the yolk of an egg, previously beaten up, in two ounces of soft water; and rice, vermicelli, or macaroni may be added, and three or four grains of cayenne pepper.

Chicken Panada.—Take the white meat of the breast and wings of a boiled or roasted chicken, free it from skin, and cut into small morsels; pound these in a mortar, with an equal quantity of stale bread and some salt, adding, by little and little, either the water in which the chicken has been boiled or some beef-tea, until the whole forms a thin fluid paste; lastly, put it into a pan and boil for ten minutes, stirring all the time. A similar panada may be made from the underside of a cold sirloin of roasted beef, or from a leg of cold roasted mutton. Either should be freed from skin or fat; and the gravy, kept until the fat is thrown in a cake and separated, may be added to it.

This panada is very nutritive for delicate children and convalescents.

Rice Gravy.—Take the gravy from a leg of roasted mutton or a sirloin of beef; leave it at rest till the fat forms a cake on the surface; remove this, and stir into a tea-cupful of it as much well-boiled rice as will serve for a meal.

Gloucester Jelly.—Take of rice, sago, pearl barley, and gelatine, of each one ounce; simmer the whole in three pints of water till they are reduced to two, and strain when cold. A strong jelly is formed, which may be dissolved in warm milk or in beef tea, or in hot water, and flavored with wine and sugar.

Sago Milk.—Soak an ounce of sago in a pint of cold water for an hour; pour off this water; add a pint and a half of good milk, and boil slowly until the sago is well incorporated with the milk.

Mutton Broth with Vegetables.—Put a pound of mutton-chops, freed from fat, into a pan with three pints of water; boil them slowly, or simmer for two hours; peel and cut three moderate-sized carrots, and three turnips into dice, boil them for half an hour in a quart of water; then throw upon the colander to drain; and having boiled two onions, sliced, in a pint of water, and also

poured off the water, add the turnips, carrots, and onions to the mutton liquor; after removing the mutton-chops, season with salt and a little celery-seed; simmer slowly for four hours; put in the chops again, and continue the simmering for another hour; the chops may be served up with the broth. This is a palatable and nutritive dish for convalescents. Owing to the slow simmering, the mutton is rendered soluble, and of easy digestion.

Tripe.—This is very readily digested when properly cooked. After partially boiling it in the usual manner, and, also, after boiling some onions in two waters, both should be slowly boiled together, until the tripe is soft and tender; salt and cayenne pepper may be added.

Sweet-bread.—To be slowly boiled; eaten with salt and cayenne pepper. Well adapted for the convalescent.

Fowl with Rice.—Free a young fowl from fat and skin, and simmer it in good beef tea till it is very tender; season with salt only; and having boiled some rice, as if for curry, add it to the liquor before the fowl is dished.

Aromatic Barley Wine.—Boil a quart of barley-water down one-third; add to it, while still hot, a pint of sherry, a drachm of tincture of cinnamon, and an ounce of refined sugar. A wine-glassful two or three times a day.

Mulled Wine.—Infuse a quarter of an ounce of bruised cinnamon, half a nutmeg grated, ten bruised cloves in half a pint of boiling water for an hour; strain, and add half an ounce of lump sugar, and pour the whole into a pint of hot port or sherry.

This is a useful cordial in typhus and low fevers; and in the debility of convalescence from fevers.

CHAPTER II.

CLIMATOLOGY OF THE UNITED STATES.

IN this chapter we purpose treating of the climate of the United States in a general manner, so that the reader may have a more correct idea of those parts of the country in which it might be best for him to locate, to travel, or to make longer or shorter visits, owing to the condition of his health or the season of the year, etc. This is more eminently proper, too, because the invalid of the United States is constantly urged to visit Europe for relief from suffering, while there is but little to convince him that travel or location in his native land would be of service to him, when really no other country has such a variety of climate adapted to the recovery of health.

We shall consider the range of the thermometer, the direction and influence of the winds, and the amount of precipitation of water in rain and snow, and the causes which produce malaria and other diseases, through the influence of swamps, lagoons, marsh-lands, alluviums, and the peculiar diseases resulting from surfaces not infected by malarious causes. We shall, therefore, give a general idea of the variability of the climate of the United States, founded on facts, ascertained by the accurate observations of scientific men, who have, either by their own exertions or the order of the Government, turned their attention to the climatology of this vast country. Of these we mention, with pleasure, the names of Dr. D. Drake and Mr. Blodget.

The range of the thermometer in the United States is, in the general, great when compared with that of Western Europe, with the exception of the Pacific coast, where it is less than any place, at least, out of the tropics. In all the States east of the Rocky Mountains, however, we find the variations great. In the State of Maine the mercury often falls below zero many degrees in

winter, and in summer rises to over 80° . These variations are common all over the Eastern States; indeed, in most of the country east of the Rocky Mountains. But as we approach these mountains, the rise and fall of the mercury becomes greater, and continues so on the vast interior plains west of those mountains until we reach the coast range west of the Sierra Nevada.

If we take a belt of country across North America, a degree or two on each side of the fortieth parallel, we shall find that the mercury occasionally reaches 95° in the summer, in the shade, and in the winter falls, once in awhile, a few degrees below zero, or on rare occasions it may be down to 20° below that point. These inequalities are found as low down as Florida; but the mercury in this State seldom gets so low as zero, but still too low for the orange to be always cultivated with safety; yet, sometimes many years supervene without danger to this and other nearly tropical plants. Much has been done of late years to determine, by what are called isothermal lines, the mean heat of different points on the surface of the earth. It is found that starting from a point on the Atlantic coast, where the mean heat is 55° , and progressing westward on a line where the mean is always 55° , that this line almost constantly curves to the north or south, being governed by the laws controlling the distribution of heat, which are governed by various circumstances, such as oceans, seas, lakes, plains, plateaus, and great mountain ranges, or sometimes by those of lesser magnitude. Now, this isothermal of 55° on the Atlantic begins near the fortieth degree of latitude, and runs westward, but varies considerably southward, and crosses the Mississippi more than 1° south of the point of beginning, then slightly south of west until it arrives at the great plains, when it turns more to the south, so that when it reaches the 108th meridian, it is almost 37° north latitude.

This increase of cold which bears it to the south so far, is caused, first, by the gradual elevation of the plains, and still more by the great altitude of the mountains, where it reaches its greatest southern curve. At this point it rapidly turns northwest, and arrives on the 118th meridian, 41° north latitude, and then turns nearly south, and when it arrives at the 28th parallel it is at the 123d meridian in the cold waters of the Pacific.

In the Rocky Mountains these isothermal lines make numerous

curves, both to the north and south, caused principally by the elevation of the mountains.

These observations on one isothermal line show that latitude does not accurately give the same amount of heat throughout its whole course; neither do any other isothermals which exist. If we take the isothermal which begins on the Pacific coast at the fortieth parallel, or say the thirty-fifth parallel, where the mean temperature is 60° , and the meridian 120° , and follow it until it arrives at the 170^{th} meridian, we shall find it on the fortieth parallel; and again, if we pursue this same line on the Atlantic coast, on the thirty-fifth degree of latitude, we shall find, when it reaches Spain, it crosses the fortieth degree, near Madrid, and before it reaches as far east as Rome, in Italy, it is found north of that city, or about on the parallel of forty-two and a half. From this point the line runs south of east, until it very nearly reaches the thirtieth parallel, and from thence in almost a direct line across Asia, and arrives on the eastern coast of that continent at about $32\frac{1}{2}^{\circ}$ north latitude. This line which we have just traced, is much more direct in its course than any of the isothermals north of it. As a sample, take the *mean* of 32° , and it is found to begin a little south of the sixtieth parallel on the Pacific coast, and arrives at Lake Superior south of the fortieth degree of latitude; it here turns north, and on the twentieth meridian east it is $72\frac{1}{2}^{\circ}$ north latitude.

Now, this great difference in the quantity of heat found at different points on the globe does not convey a just idea of the amount of heat or cold of any climate at different times of the year. The range of the thermometer is greater on continents than on islands; and it is greater on the eastern shores of both America and Asia than on the western coasts of Europe and America. This great difference grows out of the fact that, on the western coast of North America there is a portion of the Pacific Ocean extending from the thirtieth to the fiftieth degree of latitude, or about 1,500 miles of latitude and 2,000 of coast, which is called the cold-water coast. Now, this portion of the United States lying on this coast has a temperature that varies very little during the year. This equable climate runs back to the coast range of mountains, and is, in winter, swept by south-westerly winds, and in the summer by north-westerly and westerly. But the influence of these winds is mostly lost in crossing

the coast range of mountains. The valleys of the Sacramento and San Joaquin lie between this range and that of the Sierra Nevada. These valleys are extensive and extremely productive. The heat at midday, and until three P. M., is intense in summer, the thermometer rising sometimes to more than 110° ; but the nights, however, are quite cool, so much so that Indian corn can not be successfully cultivated, except in localities not very numerous; and through the length of the coast of California, Oregon, and Washington, maize does not come to perfection, because it must have a mean temperature of 66° , whereas, on much of the coast, the mercury does not rise more than 60° , and generally only to 57° . September, at San Francisco, is the hottest month, the thermometer varying but little night or day.

It is now proper to compare the climate west of the Sierra Nevada Mountains with that lying east of that range; and it may be as well to begin on the Atlantic coast, and return to the great interior plains and plateaus. In the State of Maine, at Holton, in June, 1838, the mercury rose, on the hottest day, to 98° and fell to 53° . At New Bedford, Massachusetts, the thermometer indicated, at its highest, 93° , and fell to 59° at night. This was the greatest height, with the exception of 1818, when it rose to 96° . This seems to have occurred but once in forty-four years. At Fort Columbus (New York city), the mercury rose twice in July, and once in August, 1838, to 94° . In the same year, it rose at Philadelphia to 96° . At Baltimore and Washington, in August, 1838, to 103° . In 1854 it rose at Charleston, in July, to 98° . It is singular that this is the greatest heat which occurred at that place during a period of 104 years. In Florida the greatest rise, from 1831 to 1854, was 100° ; this took place in July, 1841. At Cincinnati, from 1838 to 1854, the mercury rose once in August to 106° . At St. Louis, from 1835 to 1855, the thermometer indicated six times 100° or more, being once 107° . Fort Snelling, St. Paul, is situated at 45° north latitude. Here the mercury rose, in July, 1837, on one occasion, to 100° ; and at six other times, from 1822 to 1854, it rose to 90° , or more, once being up to 96° . This occurred in the Junes of these years, but during the Julys of this period the mercury rose 26 times to 90° , or over. It is said that the height of the mercury is as great at Chicago as it is at St. Paul, and that it sometimes falls as low in winter.

In the great interior plains of North America, the thermometer often, in summer, indicates 75° or 80° near midday; but the indication at sunrise is frequently only 24° . In August, at the South Pass, it falls to 32° at sunrise, and rises at noon to from 70° to 80° . There are, however, many places where the cold is not so great as above indicated, yet it is too great to allow of the successful cultivation of maize. As the foregoing facts show that the heat of our summers is occasionally great, it is proper to give a few statements relative to the extremes of cold.

At Holton, Maine, at least once every year from 1829 to 1845, the mercury ran down from 10° to 24° below zero. At New Bedford, Massachusetts, the mercury, during the period from 1812 to 1856, fell below zero twenty times; once as low as 10° . This shows the influence that the ocean has on temperature. At New York, from 1822 to 1854, the mercury was below zero only four times, and but once three degrees below. At Albany, away from oceanic influence, the thermometer, between 1826 and 1854, fell often below zero. Indeed, in twenty-five years out of twenty-nine it fell from 2° to 23° below. But, falling back nearer the ocean, we find that at Philadelphia, during a period of fifty-eight years, the mercury was but seven times below zero; once it was as low down as 10° . At Washington, Baltimore, and Alexandria, from 1817 to 1856, the mercury only fell below zero five times, and never more than 6° . At Charleston, South Carolina, from 1750 to 1854, the mercury ranged from 15° to 48° above zero. The lowest was in 1791; the highest in 1848. The rise and fall of the mercury at New Orleans and Baton Rouge is nearly the same as at Charleston. It, however, fell at both of these cities to within 8° of zero in 1852. At Cincinnati, from 1835 to 1854, the mercury fell in seventeen of these years below zero, once 17° , but generally much less. It was, however, in January of 1852, down to 12° .

St. Louis is remarkable for the great depressions of the mercury, for in February, 1835, it fell to 25° below zero. Indeed, in the period from 1833 to 1855, the thermometer often indicated depressions below zero. But let us take a point some six and a half degrees north of St. Louis, and we shall find a great difference in favor of intense cold. Fort Snelling, having long been a military post, the authorities early directed that the range of the thermometer should be recorded at that place; hence we have

a record from 1822 down to nearly the present time, though we have not the tables later than 1854. Now, within all this period, the mercury fell every year below zero, and on one occasion to 36° below. Even during March the thermometer is often below zero. Indeed, it would appear from the record that this point is, during winter, one of the coldest on the globe; yet we are advised to consider this one of the best places for the consumptive to spend the winter; but we shall see more of this by-and-bye. At Fort Brown, Texas, the mercury seldom falls more than two degrees below the freezing point in January and February. In 1850 it fell, in December, to 22° . At Fort Kearney it falls sometimes below zero 20° , but this is owing to altitude. At Fort Alamo it does not fall below the freezing point more than 13° .

Let us now consider the importance of the amount of water which is precipitated in the form of rain and snow in the formation of climate. Rain falls in greater or less quantities on almost every part of the earth's surface. The fall is, however, in very small amounts in some localities; and large surfaces are frequently only visited by rain once in a long time, and some places never. Snow falls on the earth in the temperate and frigid zones, but never within the tropics, unless on very high mountains. As snow only falls during the colder months in the United States, with the exception of what falls on the peaks of the Sierra Nevada and the Rocky Mountains during summer, it, of course, has little influence on climate, further than to keep the range of the thermometer more steady during winter. This is not, however, the case with regard to rain. Where there is but little, we look for but few of the productions of the earth which go to the sustenance of animal life. And again, where very large quantities fall, especially in warm countries, vegetable life usurps nature's domain to the exclusion of animal life, except that kind of it which appears in the form of reptiles, or of wild and untamable animals. In the United States there is but little of this latter kind of climate; but of the former, or arid kind, there is a great deal, as will be shown hereafter.

It is necessary to show the importance of the amount of water that is precipitated in the form of rain, because it has a mighty influence on climate as to health and disease. If, in warm countries, little or no rain falls, the earth becomes heated to a degree beyond the comfort or even endurance of man, except in elevated

regions. On the other hand, when the quantity of rain is very great, as in most parts of Brazil, and even in Louisiana, the climate becomes too unhealthy to admit of a dense white population; even the colored races seem to shun such localities. But in a temperate climate, as that of Oregon or Washington, a large amount of rain may fall, and yet the climate may be healthy, because in those northern countries malarious diseases are not produced by exhalations from the earth's surface.

In considering the distribution of rain and snow in the United States, we shall first give a few facts with regard to the amount of precipitation on our Atlantic border and the eastern slope of the Alleghanies, and down into Southern Florida. At this last point about 63 inches fall annually. Proceeding from this locality to the northern part of the State of Maine, there falls during the year from 50 down to 40 inches; often between these points. Returning to the South, we find, from 85° meridian to 97°, with its base on the Gulf of Mexico, and extending north to 40° of latitude, keeping close to the western foot of the Alleghanies, and on the west approaching within 2° or 3° of Fort Leavenworth, an immense region whose rain-fall is annually from 63 to 36 inches, and but seldom so low as 40 inches. The lower portion of this district has the greatest amount of rain, being from more than 60 to 55 inches, except on its western border, where there are only about 42 inches. At Memphis 55 inches fall; at Montgomery about 55 inches; and at St. Louis and Cincinnati 45 inches. The latter city has 48 inches. North of 40°, for two and a half degrees on the Mississippi, there are 42 inches of rain fall; but east of this line, the fall of rain becomes less, at Chicago being only 40 inches. In Michigan, and a considerable portion of Upper Canada, the precipitation of rain and snow is but 30 inches. Indeed, the whole of the lake region has but from 30 to 36 inches, very little of it being up to 36 inches. At Cleveland there are 36 inches, and so down the lakes and to the mouth of the St. Lawrence. In the valleys of the rivers which flow into the St. Lawrence, on the north, but 34 inches fall. In the country in which Pittsburg is situated there is only a fall of 36 inches. This extends for some distance around from Cleveland east, running far east of Pittsburg, and, turning southwest, terminating in the mountain region of the Alleghanies, about the 35th parallel, Pittsburg being left close to the inner curve.

We shall now take a view of the vast regions lying west of a line drawn from the mouth of Rio del Norte, to the western shores of Lake Superior. This line touches or runs near Forts Gibson, Leavenworth, and Snelling. On it about 30 inches of water fall, in snow and rain. Now there is no place west of this line, with a single exception, until the Sierra Nevada Mountains are reached, where there are 30 inches of rain and melted snow-fall during the year. The belt on which this line is fixed, however, extends in two places about a hundred miles west of it. Then the other exceptions occur between the 104th and the 107th degrees of longitude, and the 35th and 40th parallel. In this region there is about 30 inches of precipitation. In all the great plains of the interior, until the Rocky Mountain range is reached, there are only from 10 to 20 inches of precipitation. It only falls as low as 10 inches on the Peace River, a branch of the Rio del Norte; then, between the 40th and 45th parallel, 15 inches fall. Again, on the Upper Missouri, comprehending the Yellow Stone, etc., there are 20 inches. Along the Rocky Mountain range there are from 20 to 25 inches precipitation, mostly in snow, we presume. Between the Rocky Mountains and Sierra Nevada we find, in the valley of the great Colorado River, from 3 to 5 inches, mostly in the southern portion; and further north, or north-west of the Great Salt Lake, there are only from 10 to 15 inches, there being 20 inches around the lake.

West of the Sierra Nevada range the amount of rain and snow is very different at the north from what it is at the south. There is a district of country beginning on the Pacific coast, and extending far north of the limits of the United States, which, at the 50th parallel, is 5° of longitude wide, and runs south to the 40th parallel, in a wedge shape. This district, on its coast margin, has a rain-fall of 65 inches through a space of 7° of latitude; south of this, 55 inches, then 45, and then 30 inches, which is at its southern termination. This rain-belt crosses the first and second range of mountains. It throws off a branch at the 40th degree along the Sierra Nevada, which terminates on the 35th parallel of latitude. On its eastern side the amount of precipitation is considerably less than on the western, being from 30 to 45 inches.

About 2° south of the wedge-shaped space mentioned, is the

city of San Francisco. Here but 22 inches fall; and further down, on the 30th degree of latitude, but 10 inches fall.

It is a matter of importance to know the amount of rain which falls at different seasons of the year, as the amount falling during the latter months has a decided influence on health or disease. We shall first take a view of the amount which falls during the spring.

On the whole coast of the Atlantic, up to the crest of the Alleghanies, every-where about 10 inches of rain and melted snow fall during the spring. Around the southern margin of the great lakes only 8 inches fall; then, again, north of this line—taking in much of Lake Michigan, nearly all Lake Huron, and all the country west for many degrees of longitude, and being some 2° in width—only 6 inches fall. In this belt St. Paul is situated. North of it, to an unknown extent, but 5 inches fall. South of these localities, clear to the mouth of the Mississippi, the rains are more copious, being in the northern part about 10 inches; and after getting to the mouth of the Ohio, there are from 13 to 15 inches; for in all the country on the lower Mississippi this amount falls, including nearly all Alabama, most of Georgia, and a great part of Tennessee; and on the west there are, south of the Red River, and west of the Mississippi to nearly the one hundredth degree of longitude, from 10 to 12 inches.

In all the country west of the 98° or 100° of longitude, there are from 1 to 15 inches. The part where 15 inches fall is on the Pacific coast, north of the 40th parallel. In the valley of the great Colorado there is not 1 inch, and on the great interior valley the amount ranges from 2 to 5 inches. On the great plains east of the Rocky Mountains, and west of 100° of longitude, there is a rain-fall of 5 or 6 inches. All the Upper Missouri, north of the 45th parallel, has a rain-fall of but 5 inches.

If we now turn back, we shall find an increase of precipitation during the summer at many points, while at others we shall find a decrease. In all the country east of 98° of longitude there is nearly every-where an increase of rain-fall, and a great increase to the south. In central Florida 25 inches fall during the summer. At New Orleans and Mobile 22 inches fall; and all along the Atlantic coast, back to the mountains, there are in the south 15 inches; farther north, from 14 to 10 inches. In the

valley of the Mississippi there is, too, a general increase over the precipitation in the spring; even round the lakes from 9 to 10 inches fall. But, alas! when we get west of the one hundredth meridian, this profusion of rain ceases. Between the one hundredth and one hundred and fifth there are generally but from 3 to 4 inches of rain, except in the extreme south portion of this belt. West of 95° of longitude, the Rocky Mountain range has a fall of rain and snow of from 6 to 10 inches. Then, in the great interior valley there is sometimes no rain—often half an inch, or from 1 to 2 inches. In the Sierra Nevada Mountains the fall of rain is very small; and on the whole western part of California, from the 30th to the 40th degree of latitude, there never is any rain during the summer. From the 40th to the 50th degree of latitude there are from 1 to 4 inches. In the autumns of this same region there falls from 1 to 3 inches, up to the 40th parallel; then it increases north from 5 to 15 inches. The Interior Basin has only from 2 to 3 inches. The Rocky Mountains have but from 5 to 6 inches, and from these mountains to the 100th meridian, there falls, in general, from 3 to 4 or 5 inches.

During the winter there are some curious changes in the amount of precipitation in rain and snow. On the Atlantic coast the amount of precipitation is nearly the same as in autumn, with the exception of Florida, where there are but 6 inches. And then up the coast there is a belt, not far from one hundred miles wide, where only 8 inches fall. If we now pursue the valley of the Mississippi, from the Gulf to the 40th parallel, there is but little difference in the amount of precipitation from that of autumn; there is, however, in some places, a little more. But when we pass the 40th degree, we find, south of the lakes, where in autumn there were from 8 to 10 inches, that in winter there are but from 5 to 7; and north of the lakes 5 inches is all that there is. Most of this must, of course, be snow. Both above and below Lake Superior, however, there is a belt at the northern end, or side, taking in all this great lake, extending from the 80th to the 90th degree of longitude, and running irregularly to the south, reaching the Rio del Norte about the 103d meridian. This whole belt of country has only a rain-fall of 3 inches. Fort Leavenworth and Fort Gibson are in it. The lower part is much narrower than it is at Lake Superior. From the termination of this belt to the 109th meridian at the north, and coursing some

five degrees east, it terminates close to the 30th parallel, in a point. This whole space has not a rain-fall of more than 2 inches during the winter.

The Rocky Mountain region now begins, and takes in about 5 degrees of longitude, but not running directly north. This vast mountain range begins in the Black Hills, about the 98th meridian, and terminates at the 120th. At the 50th parallel, within this space, there falls from 4 to 5 inches. The Great Basin of the interior has from 1 to 3 inches; but from the 43d parallel to the 47th—the Snake River country—is not included within the Great Basin, but is equally barren and destitute of rain.

Washington Territory has, near the coast, 30 inches north, and 20 a little south. Oregon has 15 inches. Below the 40th parallel, and to the 35th, then west of the Sierra Nevada range, from 7 to 10 inches; and for several degrees lower down there is a fall of 7 inches. There is a large space on the great Colorado River where there is no rain during this period.

The reader may, after perusing the foregoing pages, come to the conclusion that North America, or at least that the United States, has a very large amount of country which is without sufficient rain for the purposes of agriculture. This is, indeed, true; but the eastern hemisphere, north of the 20th parallel, has a much larger space, which has no more rain-fall than the western part of the United States, and a much greater one that is rainless. England and Ireland have about 40 inches of rain-fall; Scotland less. Paris has but 20 inches; Berlin nearly the same; and Vienna but 18 inches. There is, on the great plains of Asia, but 10 inches of precipitation. In China and the East Indies there is generally a large amount of rain. Both in the eastern United States and China there is, in the general, a better distribution of rain than elsewhere in the same latitudes.

We shall now take into consideration the surface of the United States, both as regards its marshes, plains, alluviums, undulations, and mountain ranges. We shall first consider the Alleghany or Appalachian Mountains, which rise in Georgia and Alabama, running north-east through 20 degrees of longitude, and about 12 degrees of latitude. Their height varies considerably at different points. The Black Mountains of North Carolina are the highest in the range, unless the White Mountains of New England be considered as a link in the chain, as we presume they

should be. These mountains are nearly 7,000 feet high, and those of North Carolina more than 6,500 feet; but, in the general, this mountain range does not reach 3,000 feet above the level of the sea. Yet these mountains do not have much influence in altering the course of the winds nor the temperature of the Atlantic coast. But more of this by-and-bye.

The great interior valley of North America, which Professor Drake has so ably written upon, and so laboriously examined, is vast in extent and productiveness. It is bounded on the east by the Alleghany Mountains, on the west by the Rocky Mountains, and extends in the United States from the Gulf of Mexico to the great lakes on the north. Now all this vast region is one immense plain. No mountain is projected through it. To the north-west the Black Hills, and in the center the Ozark Mountains, push some distance into it; but they are only about 2,000 feet high, so that its climate is but little affected by them. On the western border, about the 100th meridian, that mighty barrier, the Rocky Mountain range, rises, which extends its whole length from north to south. The altitude of these mountains averages 10,000 feet above the level of the sea. West of this range of mountains comes the great interior basin, or great plains, stretching to the Sierra Nevada Mountains. This immense space contains about 500,000 square miles, and is elevated from 2,000 to 7,000 feet above the level of the sea. The Sierra Nevada Mountains rise about as high as the great range east of them; and beyond these there is a coast range, which is much lower, but sufficiently high to have considerable influence on the climate in the valleys east of it. Now, on the surface of these great plains west of the 90th meridian, and along the Missouri and the heads of the Red River of the north, saline lakes and marshes and alkaline effervescences are frequent, particularly at what are called the bad lands, which name is applied to many parts of the great arid interior plains inclosed by the northerly bend of the Missouri, and extending nearly down to the Platte.

The distinguishing plant of these soils is the artemisia, or wild sage, which begins sparsely at the edge of the plains, and becomes more abundant near the mountains, and covering the arid plains beyond them with a dense and almost exclusive growth. These arid plains are covered with this family of plants, from near the 100th meridian to the Pacific coast, as is noticed by

Frémont and others, who have traversed it in various directions. Further south, plains of salt and gypsum occur not far from the Arkansas River, about the 90th meridian; and near the Red River, in upper Texas, the artemisia, with varieties of cacti, appear. The sage occupies a space, from north to south, of 25° of latitude. In this way are these vast deserts covered with the lower forms of vegetable life. It is not difficult to see that but a sparse and not a very civilized race of men will ever occupy a country so unfriendly to agriculture, and to most that tends to make society prosperous. These observations do not apply, however, to the Pacific coast, and to the country north of the 43d parallel and west of the 98th meridian, for in these vast regions mankind are destined to intellectual and physical developments probably equal to any that may have occurred in the world.

We now must consider the influence which the surface of the United States has in the production of health or disease, and, also, what influence the winds have in these respects; those causes of diseases incident to districts producing malaria, as well as those which favor inflammatory affection, and continued fevers.

The low districts of the south Atlantic States have all the requisites necessary to the production of miasma, for the rivers there "spread very much in lagoons and shoals, and rarely enter the sea by deep-water channels;" and north of these localities we find, almost constantly, marshes, swamps, etc., which are equally favorable to the production of this poison, until we arrive at Long Island Sound, for in the vicinity of New York remitting and intermitting fevers are common; so, too, at other localities south of that. In early times, these diseases were even found in the valley of the Connecticut River. On this low margin of the Atlantic coast it will ever be an impossibility to successfully rescue it from the production of diseases growing out of miasma, the production of these swampy localities. But to return for a moment to the south. We find in Florida thousands of square miles of swamp land; the same is the case with eastern Georgia, and large portions of South and North Carolina, etc. Those unfortunate human beings whose destiny has been cast amid the exhalations of those vast swamps, grow to manhood with slender frames, but often tall. They have prominent abdomens and attenuated limbs, with sallow and bloated features; they

move slowly, talk in a drawling manner, and mostly have remitting or intermitting fever some part of every year. Their energies are feeble and their lives short. When these creatures remove to more healthy districts in the West, they nearly always cease to have malarious fevers. We have known people from situations where ague did not exist remove to these localities and take this disease—a curious fact. But we must now consider the Mississippi Valley, which has long been considered the hot-bed of malarious fevers. The great alluviums of the lower part of the valley are very extensive; and as we pursue the Mississippi north, we find immense bottoms, until we reach St. Louis. Still higher up on this river we find extensive alluviums and lagoons; while in addition to these sources of malaria on the main stream, the tributaries give vast additions. There is the Red River, two thousand miles long, with the Arkansas, the White River, and Missouri, on the west, which have immense low grounds on their margins that are frequently overflowed during floods. The valleys of all these rivers are well known to be unhealthy, and for long distances have lagoons and swamps which never dry. The Missouri, indeed, one thousand miles from its mouth, loses, in a great measure, its malarious bottoms; so do some or all of those mentioned. On the east side of the Mississippi, the Tennessee, the Ohio, and Illinois have many unhealthy spots in their valleys. On these malarious diseases principally abound. Now, not only these great bottoms produce bilious fevers, but many of their small tributaries which drain the rich prairies of Illinois, Missouri, etc. Even the numerous affluents of the Ohio, which drain the western slopes of the Alleghanies, have alluviums sufficiently large to give origin to these diseases occasionally.

It is conceded by all writers on the subject, that autumnal fevers are often intense on the bottoms of all the Southern rivers, and but little less severe on many of the lime-stone lands of the State of Mississippi and those of other States south; but all likewise admit that, as we travel north, those diseases gradually diminish in severity and in frequency, until they eventually disappear about the 47th parallel. Malarious diseases were once frequent on the lowlands of the rivers falling into Lake Erie; but they have diminished of late years, though near the lake they still exist with their wonted virulence, or nearly so. Throughout the valleys, wherever the bottoms do not overflow, a constant lessen-

ing of these fevers is the consequence. The great alluviums of the Mississippi are overflowed every year, and frequently leave ponds and lagoons, which constantly engender those vapors that produce fever. Of course there is but little hope of the destruction of these causes. Many who live in malarious situations enjoy good health. They claim that they live in the most healthy part of the world.

It is proper we should notice those parts of our country which are either so much elevated and uneven, or so thin or sandy, that no stagnation of water occurs. Where these districts lie very near, or are bounded on the west, south-west, or north-west by malarious grounds, the inhabitants may have remitting or intermitting fevers. It would appear that where dry and undulatory plains without timber are situated, as above stated, and malarious marshes or swamps are extensive, that bilious fevers may be produced for many miles by the poison carried by the winds. Aside from this, dry and elevated countries are very seldom infested with these fevers. There is one decided exception to this; that is in the auriferous regions of California, and also in the great valleys of that State. Dr. Black insists that the atmosphere is malarious, notwithstanding the total absence of swamps and marsh lands, and that the hypothesis that heat and moisture and vegetable decomposition are necessary to the production of remitting and intermitting fever, is not founded in fact, and is wholly untenable. He cites his own experience in the gold regions, where he arrived long after the rains had ceased, and remained while there was neither rain, dew, nor fogs. Yet he had to encounter, with others, long-continued intermittents, although neither he nor his friends had ever before suffered from any similar disease. In the day a continued wind from the Pacific prevailed, and at night winds from high and snow-capped mountains. In this situation there was not the least possible chance for vegetable decay. But is it not right to charge most of these to direct importations from the Isthmus, and many to dormant malarious impressions which only need hot days and cold nights to develop them? for it must not be forgotten that malaria implants in those subjected to it a disposition to bilious fevers of a remitting or intermitting kind. On this point there have been many mistakes made by physicians and writers, who generally labor under the impression that

this poison soon develops itself after having made its lodgment in the system. Now, we have often known cases where the subject had been exposed to malarious influences, and the remitting or intermitting fever has not occurred for three months, or even longer, afterward. It seems that fever is very common in California, and probably further north. Much of it is probably of a continued type, and, from some statistics which we have seen, we should think fatality is frequent. There is one matter that must be taken into account when considering the causes of fever in that State; that is, that the winters there are the periods of the greatest rainfall, and then is the time when vegetation flourishes, as well as in early spring, at which season the growth is immense, and continues so until late in April, when all at once the rains cease; and then comes a sudden decay of vegetable life, both of the present and former year. Decomposition during a few weeks takes place, and then all is dry, with great disparity of heat between night and day. Then why should not remitting and intermitting fevers come? Why should not the surface exhale the particular poison which produces these fevers? We think that it is pretty plain that such may be and is developed. Those living in such a situation would not at once, but within a few weeks, or longer, be subjected to them.

Ague and fever, says Blodget, blends every-where with localities of the deadly miasm. The destruction of the British army in the Netherlands, in 1809, is ascribed to ague alone. At Bordeaux, in 1805, says Johnson, 12,000 were seized, and it proved fatal in 3,000 cases. As understood in the United States, such results could hardly ensue, as ague is usually, if not universally, taken to be a curable disease, and fatal results are but seldom. This disease is epidemic over the Netherlands and Lower Germany; and generally over alluviums and river valleys, with marshes and stagnant water, in all parts of Europe south of these points, and in some localities north of them.

Those districts or regions which are not subjected to malarious diseases we must now take a view of. The amount of these are very extensive. First, nearly all New England; much also of the State of New York; all, or nearly all the Alleghany range of mountains, with long distances on each side, particularly on the west side, seem to be nearly clear of malarious diseases. The rivers and smaller streams penetrating these mountains fre-

quently have bottoms on their margins which give origin to autumnal fever. There are, in some situations, plateaus on the tops of these mountains, which are either wet or swampy, where these fevers occur.

The writer knows well, from experience, that for a long time after the first settlement of the country, physicians considered all fevers that occurred on the slopes of the mountains as bilious, and so called them; and it was not till some time about 1842 that the fevers of these localities were recognized as continued or typhoid in their character. Now all countries situated as those parts of the United States which have no marshes, swamps, stagnated waters, or extended flat and wet lands, and holding surface water, are subject to these continued and inflammatory fevers. These diseases must predominate in Oregon and the country east, until we reach below the 42d parallel on the Mississippi, except in some sparse localities; and for long distances south of this, in the great *interior* basin, and mountain ranges west and east of these interior plains, as well as those east of the Rocky Mountains.

Our observations would not be complete unless we take into consideration the course of the winds, and their influence on the climate of our country.

In all countries the winds are acknowledged to have a great influence on their climatology. The ancient Greeks had a temple dedicated to the winds, with statues showing by their attitude winds from certain points to be either severe or mild. It must, however, be admitted that the atmosphere has in itself no power of this kind, unless other agents act on it. The great agent is heat. Air expands by heat, and becomes lighter; it rises from the earth, and that which is colder and more dense expels that which is light. These facts are constantly occurring on the earth's surface, either in a lesser or greater degree. It takes place in our heated rooms, in our cities, in deep ravines, where the atmosphere is still, and the sun throws his rays against the declivities on either side, and on the heated plains, causing gentle breezes, or severe winds, storms, or tornadoes. Within the tropics these demonstrations often appear upon a grand and fearful scale. The atmosphere is thus kept constantly in motion, unless where calms occur. Mountain ranges, broken country, and forests check the velocity of the winds. Their course is often turned from

a direct line by these causes, which however, only act on the surface winds of the globe, for the higher strata of the atmosphere do not seem to be much turned from their onward course by these surface obstructions; hence the higher currents of the atmosphere in the north temperate zone seem to pursue their course eastward, leaving the lower strata to be controlled by the irregularities of the earth's surface, or by the electrical and calorific influences which display themselves. When the atmospheric currents pass over extensive plains, oceans, or even low mountain ranges, like those of the Alleghanies, the upper strata carry the lower with them, often for long distances, as the western winds sweep from the far west, cross the Alleghanies and Atlantic, only being exhausted after passing far into or over the European continent, rendering the northern and western part of that continent more temperate.

The barriers formed by the Rocky and Sierra Nevada Mountains rise so high that the winds near the surface of the Pacific find the obstructions to their eastward progress so interrupted that they never reach the plains east of those mountains. At the passes of the Sierra Nevada range, and in all the entrances from the Pacific to the interior districts and deserts, there are continued and violent winds from the west. In many places the abrasions found in the rocks have been caused by these winds. The rocks and clay surfaces have cavities and traces worn in them in parallel lines, like the abrasion of rocks caused by the transportation of rocks or ice; and by the resistance thus made, the surface winds are exhausted on their way across the great desert.

Let us consider for a moment the course of the winds below the 35th parallel down to the tropics. This space is occupied, on the land, in the United States, by irregular winds, monsoons, calms, and winds undefinable—that is, belonging to local and peculiar causes and systems. It is a district of great difficulty in examination, the contrasted surfaces of land and water producing sea breezes, as well as limited coast monsoons. There are still greater causes of irregularity to which the great monsoons are due, and the peculiar winds of Texas, of the lower Mississippi Valley, and of California, are of this character or origin. It is probable, and even more than probable, that the north-westerly winds that sweep the coast of California, and render it so cool during summer, are produced by the heated winds

from the plains of Mexico, which exhaust themselves on the great interior plains ; and then the south-western winds reach the same coast during the cooler months, bringing with them heat and moisture, which favor the productiveness of that country.

In New Mexico the disturbances of the atmosphere are very irregular, and when they descend to Texas they are entirely changed. They there blow from the south-east during one hundred days, and from the south sixty, but only twenty-five days from the west and twelve from the north. These movements of the atmosphere give a great preponderance to the south-eastern and southern winds, and, of course, gives them an important influence on the climate of that State.

In the Mississippi Valley the southern and south-western winds predominate from April to October. In the other months, above the 35th parallel, western and north-western winds have the predominance. At Cincinnati, it is shown by that careful observer, Dr. Ray, that during sixteen years there was an average of winds as follows: Eighty days from the south-west, ninety-five from the west, and, from the north-west, fifty-five. These, of course, constitute the principal winds. They have, however, occasionally atmospheric currents from the north-east, but from the south seldom. During the sultry summer of 1865, and in September, the winds from the south were more prevalent than usual at Cincinnati. The south winds are mostly exhausted south of that point. To the north-west, we find, at Fort Snelling, Fort Howard, Green Bay, and at Fort Brady, Michigan, that the north-westerly winds greatly predominate, being from one hundred and sixty-five to two hundred and nineteen days in that direction.

There is but little difference in the direction of the winds on the eastern slope of the Alleghanies from those of the western. The severe disturbances of the atmosphere on the Atlantic coast, from Florida to Maine, are felt nearly to the base of those mountains; but they are much more severe near the ocean than further inland. These severe currents on the Atlantic are frequently equaled by the blows and storms on our great lakes.

It may be proper to consider briefly the history and nature of *storms*, *hurricanes*, and *tornadoes*. All countries are, more or less, subject to these atmospheric convulsions; but the eastern parts of the United States are especially amenable to such violent disturbances. This is particularly the case the nearer

we approach the tropics. Indeed, some of the most violent which have anywhere occurred, have been in the lower part of the Mississippi Valley, and they extend often as high as the lakes, and there do much damage. They are almost always accompanied with rain in the south, and with snow, or snow and rain, further north. These disturbances of the atmosphere are brought about by the same general causes which excite the movement of the winds, but these operations of heat, electricity, etc., are greatly intensified in the production of storms. Storms travel at the rate of twenty-five or more miles an hour, and are generally from the west or north-west, and continue in this direction until they reach the Atlantic, when they curve to the north-east, to accommodate themselves to the isothermal lines. These observations apply to the winds north of the 35th parallel. South of this severe general storms occur, but different in their movement. In Texas they are called northers, and take place often along the whole coast of the Gulf with great severity. In winter they here move eastward, but not in other seasons. These storms, above the 35th degree, do not originate in the Rocky Mountains, but on the eastern side of the great plains, about the 98th meridian. At their beginning they do not precipitate much rain or snow, but as they advance east this precipitation increases, and sometimes, in the country west of the Lakes Michigan and Superior, there is a fall of about a foot of snow, or enough to answer all the purposes of travel by sleds. But to return: We find, as we progress eastward, that there is an increase of snow until we reach the State of Maine, which increase does not seem to diminish until the ocean is approached. The snow in these Eastern States generally averages about 60 inches in its loose state. New Hampshire has about 68 inches, and at Burlington, Vermont, 85 inches fall; but in Massachusetts the quantity is only 54 or 55, when at Cincinnati there is only an average of 16 inches each year.

The quantity of snow which falls south of the 41st degree of latitude is very uncertain. The storms accompanied with rain or snow precipitate these often rapidly, and the winds are frequently severe. This, however, is not so much so in the Mississippi Valley as it is east of the Alleghanies and south of the degree above mentioned. Snow lies generally but a short time on the ground; indeed, often melts as its falls, or immediately after.

West of the 98th meridian there is but a slight fall of snow until we reach the Rocky Mountains, where there is precipitated, during the colder months, 10 or 12 feet of loose snow; and, again, a considerable amount in the Sierra Nevada range, but there is but little on the interior plains.

During the warmer months of the year, there are rain-storms, and occasionally hurricanes, near their center; and within these, once in a while, tornadoes. These hurricanes often do much damage by destroying forests, and scattering fences to the four winds, and but too often cause the destruction of houses and barns, while human lives are occasionally lost. Such hurricanes are frequently several hundred miles in width, and travel from forty to eighty miles an hour—the latter speed renders them very dangerous—sweeping down nearly every thing in their way. Tornadoes are still more fearful in their consequences. They are composed of one or more whirlwinds, which extend in width from thirty to two hundred rods. In this space they travel so rapidly, and do their work so quickly, that no prudence can avoid the consequences. The travel of these hurricanes and tornadoes is always from west to east, or nearly so.

Those storms which travel our great lakes very often do much damage to the shipping, and render navigation especially dangerous during the two latter months of autumn, and again during the months of March and April. These lake storms do not appear to be more severe than on the Atlantic coast. The country on the lake borders, and for some distance interior, is swept by these severe blows which make it an unfit abode, during the colder months of the year, for patients laboring under bronchial or tubercular disease; this is, however, equally true of the Atlantic border.

It must not be forgotten that the great prairie regions of the interior valley, as well as the treeless plains, deserts, etc., west of them, have often continuous winds that frequently last through several days, but are, during the warmer months, pleasant and often delightful. In winter and spring they are severe, and not easily endurable by invalids with bronchial affections.

The question now arises where the best points in this extensive country exist for the invalids laboring under various maladies to visit or reside in. In general, invalids feel and do best in parts where the humidity of the air is but little, and where rain

is unfrequent. As a general rule, the rain-fall in the northern situations is not so great as in those further south; but in the north the fall is slower, and there are more cloudy days; so that, really, the invalid suffers frequently more from these slow precipitations than where rains fall heavily and are followed by clear skies. For instance, the pine woods of Florida, of Louisiana, and other parts of the south, where there are no swamps nor rich alluviums, but deep sand, patients laboring under malarious diseases do as well in them as they would in similar situations north; and where these localities lie moderately high, those worn out by these diseases may, with great propriety, be advised to repair to them for the recovery of their wonted health. Then these patients may be again directed to high situations in the north during the summer. Most of New England can be visited with advantage by patients whose health has been broken by autumnal fevers, and they may make their home there with benefit. So, also, will they be benefited by visiting almost any part of the Alleghany range, and in all situations on their eastern or western declivities, until level plateaus and swamps occur. Hence, the rolling and hilly country down to the Ohio River may be chosen, and even on the west side of it, for some thirty miles, to a point below Louisville. This distance is sometimes much under thirty miles, but often over. Care must always be taken to live away from low bottoms and stagnant water. On the eastern slope of these mountains there is a large and healthy race of men produced, who seldom or never suffer from malarious diseases. Of course all these localities are proper for the residence of invalids who wish to get rid of the influence of malaria; but patients wishing to get clear of all malarial effects in a short time, should visit the Upper Mississippi, at and above St. Paul, or they may explore the upper country on the Missouri, and visit the great plains bordering the Rocky Mountains down to Texas. Even New Mexico could be traversed with advantage. Then, again, the Lake Superior region is among the best for a summer residence. Probably the Island of Mackinaw is as delightful a place as can be chosen for a summer resort. "There," says Dr. Drake, "the three great reservoirs of clear and cold water—Lakes Huron, Michigan, and Superior—offer a delightful hot-weather asylum to all invalids who need an escape from crowded cities, paludal exhalations, sultry climates, and officious

medication. Lake Erie lies too far south, and is bordered with too many swamps, to be included in the salutiferous group."

There can be little doubt that the immediate coast of California is one of the very best locations for a summer residence for invalids, not only of this, but of any other continent. There the temperature is always equable, and there is no rain. The time is fast hastening on when this locality can be reached by rail in a few days, which will give the worn-out city inhabitants the opportunity of visiting it, and of being cured of their headaches, their want of appetite, and their debility.

But we have to consider for a moment the proper place for the consumpted, and for those in general who have contracted disease in what are considered our most healthy districts of country. The acute forms of them are not likely to be benefited by removal, but chronic inflammations can often be benefited by a change of climate. Of these may be mentioned chronic inflammation of the bronchia, and chronic rheumatism, with various other chronic affections of the nervous and secretory organs. Patients laboring under consumption of the lungs, or tuberculose of a more general character, or with scrofula in any form, should visit California, if within their power. There is, however, a wide difference of opinion among physicians with regard to what places patients should be advised to resort who labor under consumption of the lungs, or scrofula in general. Some think that a dry northern climate should be preferred, and even insist that such invalids are benefited by spending their winters in regions like that of St. Paul. That many patients have been much benefited by visiting and spending their winters there, there can be little or no doubt, but still less of spending their summers in that locality, or in localities higher up the Mississippi or Missouri rivers. These physicians are pleased when their patients choose Dacotah, or even do not object to their going still further west on the same parallel. But we believe that a majority advise a southern climate in preference; hence New Orleans and other parts of the South are recommended for winter residences. Western Texas is sometimes favorably mentioned, and, no doubt, with great propriety, as a proper place for winter residence. There but little rain falls, and the only winds that are unfavorable are northers, which last but a few days at a time, and come but seldom. Many parts of Florida, also, are delightful during the winter, as the climate is

warm, and during the winter there is but little rain. But of all the countries on the globe, California is probably the most favorable for those laboring under consumption. If it does not cure it mitigates the horrors of this dreadful disease, and seems often to stop its progress for considerable periods. The southern part of California is the most favorable for these patients. It seems to be clearly proven that there are not more than one-third as many cases of consumption in this Pacific State as there are in New England, in proportion to the number of inhabitants. New Mexico is favorable to patients with breast complaints; so is Mexico; and we presume that all the warm countries of South America, where there is but little rain and not much elevation, would be a boon to Northern patients. We presume that Chili, near the coast, has a climate that would benefit the consumpted nearly as much as any other. There is one thing which takes place occasionally with patients who labor under consumption, that has advanced into the second stage, or where softening has begun in the tubercles; that is, that when they remove to a malarious locality, where autumnal fevers prevail, and take either remitting or intermitting fever, the softening of the tubercles is apt to occur, and cause the patient to die in a comparatively short time; therefore patients thus diseased should avoid all very malarious situations. And, again, consumpted patients, and those affected with bronchial disease, should avoid living on the shores of our great lakes. The severe winds which are so frequent there are the sources of much bronchial disease, and, of course, will hasten the fatal march of consumption. These remarks will apply equally well to the cutting winds on the Atlantic coast, especially its northern portion.

CHAPTER III.

MINERAL WATERS.

THESE may be arranged into the following classes: Alkaline Waters, Acidulous, Chalybeate, Sulphureous, and Saline.

Alkaline Waters owe their properties to a free alkali, or, it may be, one slightly carbonated. An alkaline reaction is made sensible by the proper and usual tests.

These springs are rare. They contain carbonate of soda and carbonic acid, and are almost entirely free from earthy substances. The best instance of this water is that of the Furnas, St. Michael's, Azores. The Vichy waters are alkaline, and are often added to acid wines, which they neutralize. They are useful where there are deposits of uric acid in the urine; and from the small yet efficient proportion of iron they contain, they increase the appetite and strengthen the digestive powers.

The water is as nearly tasteless as possible, perfectly clear, and without smell. Ems, Teplitz, Mont d'Or, and Ischia are of this kind. The waters of Ems and Teplitz are warm. The only mineral waters in England, which contain carbonate of soda, are Malvern, in Worcestershire, and of Ilkeston, in Derbyshire.

These waters are useful in gout, indigestion, and the lithic acid tendency.

Acidulous Waters, or carbonated, are brisk and sparkling. They slightly redden litmus paper if the waters have not been boiled; the redness disappears on exposure to the air. Besides free carbonic acid, they contain bicarbonates of soda, lime, magnesia, and sometimes of iron. There are either warm or cold acidulous waters.

Of this kind are the springs of Cleves, Carlsbad, Kissingen, Fachingen, Marienbad, Geilnau, Rippoldsau, Soden, and Tonstein, in Germany; Languac, Upper Loire; Passy, near Paris; Wies-

baden, in Nassau; Bandola, in Italy; Granshaw, in Ireland; but Pymont, Seltzer, Spa, and Carlsbad are the most celebrated.

All these waters afford a grateful and moderate stimulus to the stomach. The Pymont and Spa, from containing some carbonate of iron, are most useful in all cases of impaired digestion; while the Altwasser, Salzbrunn, Reinerz, Carlsbad, and Seltzer, which are more purely alkaline, are useful in gravel and calculous affections.

The *Chalybeate* or *Ferruginous Waters* owe their properties to iron. They have an inky, styptic taste. When newly drawn they are transparent, and strike a black color with tincture of nutgalls or with tea. The iron is often combined with excess of carbonic acid; but it may consist of the sulphate of iron. The acidulated chalybeate waters of the Pymont Trinkquelle, or Drinkspring, of the Swalbach and Spa, are brisk, pleasant, and grateful.

Chalybeate springs are numerous in the United States. The most noted of these are Ballston and Albany, in the State of New York; Hopkenton, in Massachusetts; Bedford, Pittsburg, and Frankford, in Pennsylvania. Virginia, Kentucky, Tennessee, and Ohio all boast of waters of the same class. The Bedford springs are the most celebrated in Pennsylvania, and justly stand among the foremost. As a chalybeate, the Bedford is about the same with Ballston and Saratoga waters. It has less common salt than these, but has a decided impregnation, says Bell, of Epsom salts, by which it is better fitted to act on the stomach and bowels. The accommodations at these springs are good, and the surrounding country delightfully pleasant and healthy.

Chalybeate springs are very numerous. On the continent of Europe are the following: Abcourt, St. Germain; Aumale and Fourges, near Rouen; Bologna; Buzot, a warm spring in Spain; Caroline Baths, in Bohemia; Daswild, Baden, in Germany; Driburgen, in Westphalia; Naptha, in Russia; Nisdenice, in Germany; Schwalbach, in Nassau; Ponges, Hassenfratz; Perekop and Sarepta, in Russia; Scollensis, Switzerland; Suchalda, Hungary; and Vechy, near Moulines. In Great Britain there are those of Arbroath and Peterhead, in Scotland; Ashton, in Wiltshire; Balemere, Worcestershire; Ballycastle, Antrim; Ballynahinch, Down; Ballyspellen, Kilkenny; Bandon, Cork; Bromley, Kent; Brownstown, Kilkenny; Castleconner, Kilkenny; Castleconnor, Limerick;

Castlemaine, Coalcullen; Corville, Coventry; Croptown; Doneraile; Dunnard, near Dublin; Galway; Garryhill, in Ireland; of Haigh, in Lancashire; Hampstead, Hartfell, Scotland; Islington; Kilcoran, Kilagre, Kirby, in Westmoreland; Lancaster; Llandriddad, Wales; Luz, in Essex; Listerlin, Mallory, Newton Stewart; Oakfield, Phoenix Park, Dublin; Scool, in Ireland; of Shadwell, near London; Somersham, Hants. Tunbridge, Brighton, and Peterhead are the most celebrated.

The Cheltenham contains carbonate of iron.

When preparations of iron are taken into the stomach, they are partly absorbed, partly evacuated, more or less changed with the stools. The red color which the sesquioxide of iron communicates to the stools of children, and the black color of the stools after the employment of the salts of iron, are proofs of the presence of iron in the motions. And iron has been detected in the blood, urine, and milk.

When the preparations of iron have been given in cases proper for its employment, the appetite increases, digestion is promoted, the pulse becomes fuller and stronger; the skin, from being too pale or sallow, assumes its natural tint; the lips and cheeks become florid, the temperature of the body is raised, all swelling of ankles, etc., disappears, and the strength is increased. Consequently, where there is a full habit of body, flushed face, full, quick pulse, etc., chalybeates would be decidedly injurious. The iron acts upon and alters the constitution of the blood, as chemical analysis has shown, but which analysis need not here be detailed; consequently, chalybeates are fitted for cases of indigestion, scrofulous disorders, cancer, stoppage of the periods when connected with debility; non-appearance of them—green sickness. Much of the efficacy depends on the extremely minute division of the iron, and the other components, while their operation is modified by the carbonic acid in which the iron is suspended, and they usually agree better with the stomach. When these waters sparkle in the glass, they should be drank the moment they are drawn from the spring. With those not carbonated this does not matter.

The Aluminous Chalybeates.—Those which contain sulphate of alumina—namely, the sand-rock in the Isle of Wight, the strong Moffat chalybeate, the Vicar's Bridge chalybeate, and the Passy waters—are apt to occasion pains in the stomach if taken in an undiluted state.

The Sulphureous or Hepatic Waters are impregnated with hydro-sulphuric acid (sulphureted hydrogen); and by virtue of this sulphureted hydrogen, they have the smell of rotten eggs; and when solutions of lead, silver, copper, bismuth, etc., are added to these waters, black precipitates fall, which are metallic sulphurets. When strongly impregnated with the gas, they will redden litmus paper, and blacken silver and lead when even in a weak state. But some of these waters retain, even after boiling, their power of causing these precipitates. And then there is a sulphuret or hydro-sulphuret of calcium or sodium in solution. All the British sulphureous waters are cold; but some of the continental are thermal or warm.

These waters exercise a stimulant influence over the system, and are adapted for chronic ailments. They are supposed to exert a specific power over the skin and the womb. They are employed both internally and externally in skin diseases, lepra, psoriasis (scaly tetter), itch, dandruff, ringworm, etc.; in non-appearance, or stoppage of the periods; in chronic rheumatism and gout, in piles, and in some cases of bronchitis. They certainly act on the skin, and are sudorific (sweat-inducing) and diuretic. They are given in obstructions, or torpor of the liver or bowels; in scrofula, and in some hypochondriac or dyspeptic cases. They are apt to occasion headache, which lasts a short time, directly after they are drank.

Saline Waters owe their properties to saline compounds, consisting of salts, the basis of which is lime, or chlorides of sodium and magnesium, or sulphate of magnesia (Epsom salts), or alkaline carbonates—carbonate of soda, especially. Most of them are purgative, the great proportion of water adding to their effect.

The most celebrated springs are those of Cheltenham, Leamington, Bristol, Kinalton; Pancras, near London; Scarborough, Sydenham, and Thursk, in Yorkshire; Pitcaithly, in Scotland; and on the continent of Europe, Carlsbad, Pullna, Seidschütz, and Seidlitz.

Their use is required wherever an aperient action on the bowels is demanded, as in indigestion, hypochondriacism, chronic disease of the liver, jaundice, and the various forms of scrofula. Some contain a good deal of carbonic acid, and are more grateful; others contain some iron, as in the Cheltenham waters—which

last are serviceable in stomach ailments and stoppage of the periods. They may be divided into bitter purging waters, in which Epsom salts predominate, as those of Epsom and Scarborough, in England; Seidlitz, Seidschütz, and Pullna, and a thermal water, Acqua del Pozzato, near Pisa.

Glauber Salts Waters, as the warm Carlsbad, which are also alkaline as well as purgative, and the cold waters of Marienbad (the Krüzbrunnen and Ferdinansbrunnen), and Franzensbrunn (the Salzquelle), Cheltenham, Leamington, and Spittai, are earthy Glauber salt waters, useful in diseased liver, dropsy, piles, blood to the head. Salt or brine waters contain iodine and bromine, with chloride of sodium (common salt). Those of Middlewich, Nantwich, in Cheshire; Shirleywich, in Staffordshire; and Droitwich, in Worcestershire, are of this kind. The Kreuznach and Salzhausen Springs, in Germany, belong to this class; also the thermal waters of Wiesbaden, Baden Baden, and Bourbonne. The common salt springs are the Cheltenham old well, Leamington, and Pyrmont. Some contain iron, as those of Kissingen and Hamburg.

The bromine and iodine salt springs are the Woodhall or iodine spa in Lincolnshire, and the Kreuznach. The waters of the Dead Sea are of this kind. They are useful in glandular enlargements—scrofula.

Alkaline Waters.—The acidulated alkaline have been noticed. The Vichy, for instance. The Seltzers contain common salt; the Carlsbad contain Glauber's salt. Some contain iron, and have been noticed. Those containing carbonate of soda are Malvern, in Worcestershire, and Ilkeston, in Derbyshire, England—useful in gout, indigestion, and gravel, of the red or uric acid kind.

To the class of *Saline Mineral Waters*, the water of the ocean belongs. The saline matter contained varies in different latitudes. Between 10° and 20° , it is rather more than one twenty-fourth; at the equator, one twenty-fifth; and at 57° north, it is one twenty-seventh. Brought up from a great depth, its taste is purely saline; when from the surface, it is disagreeably bitter, owing probably to the animal and vegetable matters suspended in it. Its specific gravity varies from 1.0269 to 1.0285, and it does not freeze till cooled down to 28.5° of Fahrenheit. Its properties as a medicine resemble those of the saline purging

waters, but they are more powerful as a bath. Its efficacy is much superior to that of fresh water.

The diseases which are likely to be benefited by the use of mineral waters will now be mentioned, and those waters which are adapted for special disorders. They would seem to act beneficially, in the first instance, on the digestive organs; and, as many diseases of the skin and other parts are connected with or depend upon those organs of nutrition, we see how the benefit may arise from putting them into a healthy state.

Disorders of the Digestive Organs.—Traveling and the mere change of climate may suffice to relieve or cure many of the lighter cases, but in the more chronic instances more is wanted. In such cases, mineral waters increase and correct the action of the secreting and excreting parts of our frame; the blood is thus cleared of its vitiating ingredients, and any congestion or fullness of particular organs is removed.

In indigestion of long standing, when there is no dry, red tongue, no thirst nor other signs of excitement or irritation, mineral waters, well chosen, will do good; but in inflammatory indigestion they will do harm by the excitement they occasion.

When we have reason to believe that the mucous membrane of the stomach and bowels is in an irritable or congested state, complicated with chronic liver disease, or when the usual periods are not regular in their appearance, the waters of Ems, Vichy, or of Plombières will be useful, especially if the system is not too relaxed.

If this state of bad digestion be mixed up with chronic affections of the air passages, or with diseases of the skin, then the waters of Cauterets, in the Pyrenees, will be the best adapted.

Should the liver and stomach be in a torpid state, as shown by the usual signs, Marienbad, Carlsbad, and Kissingen should be chosen for residence. The cold aperient waters of Marienbad will answer well if active aperients are not required, but if they are, Kissingen waters will suit better, from being more exciting.

In atony of the stomach, with nervous debility of the system, and in debility of the womb and its functions, the invalid may begin with a course of Ems, Carlsbad, or Kissingen waters, and then go to Pyrmont or Schwalbach. To keep up some action on the bowels, the Eger waters are sufficient, but when a more

tonic effect is sought, the waters of Schwalbach or Pyrmont are preferable.

But none of them will do good if there is organic disease in the stomach or a state of irritation.

The waters may, at the same time, be used externally as baths. All excitement is to be avoided while taking these waters.

The thermal saline waters, called the warm springs of North Carolina, deserve a notice. Paralysis and chronic rheumatism are among the diseases cured by drinking these waters. Of the cold saline springs of the United States, those of Saratoga are the most celebrated. They contain a large amount of carbonic acid; they, too, contain carbon to so great an amount that they might be called, with propriety, chalybeate; but as they have a free action on the bowels, we place them under the head of saline waters. From one to three pints of what is called congress water, when taken before breakfast, will generally open the bowels freely. Dr. Steel's valuable work on the Saratoga waters should be consulted by those wishing to visit watering places.

Of the various hot springs which abound in the United States, those of Virginia stand among the foremost; but probably the hot springs found on the upper waters of the Washita, in north latitude $34^{\circ} 31'$, near the base of the south-eastern slope of the Ozark Mountains, are the best. These celebrated springs lie about six miles north of the Washita River. (See Major Long's expedition to the Rocky Mountains.) They are situated in a region elevated from seven to fourteen hundred feet above the level of the sea, and in an undulating, poor, and stony country, where health may be restored if pure air can effect such result. Here the springs are about seventy in number, and burst out near each other, some of them falling from the cliffs eight or ten feet, giving the finest opportunities for many kinds of bathing. The water ranges in temperature from 92° to 151° Fahrenheit, and is almost pure, holding a little saline in solution. We have seen a number of patients who had been much benefited by bathing, etc., in these waters; the rough country and plain living having, no doubt, added much to the relief obtained. Chronic rheumatism is the disease which they mostly benefit. The time is not far distant when these springs will be greatly resorted to—as much, probably, as any in the country.

Bronchial Diseases.—Ems, Bonnes, and Cauterets, and Mont

d'Or, in Auvergne, are the places recommended in these affections. In bronchial invalids of delicate constitutions, the waters of Ems; in those demanding mountain air, or complicated with skin disease, those of Bonnes or Cauterets; and in languid, defective action of the skin, with chronic bronchial suffering, the waters of Mont d'Or; but when the air passages are suffering secondarily, after congestion of the liver and abdomen, the waters of Carlsbad, Marienbad, or Kissingen are pointed out as most suitable.

Asthma.—A difficulty exists in recommending any mineral water for pure asthma, because some asthmatics can not live high up on mountainous land; and others can not breathe in lowland valleys; but where bronchial irritation or disorders of digestion are added to asthma, then mineral waters may prove beneficial. If asthma is complicated with heart disease, mineral waters are altogether inadmissible, and will prove decidedly injurious.

Gout.—For chronic gout, Ems, Carlsbad, Marienbad, Aix-la-Chapelle, and Wiesbaden waters may be taken. The soothing effects of the Ems waters form a good preparation, in many cases, for the more opening and purifying waters of Carlsbad, and then may advantageously be followed by bathing and the douche at Wiesbaden or Aix-la-Chapelle; and they are very beneficial when the joints have been rendered stiff and swollen from repeated attacks. Friction and the douche often effect much benefit in this last case. Any disposition to heart disease, or to disease of the brain, contra-indicates and forbids the use of any mineral waters.

Rheumatism.—Climate and mineral waters are very beneficial in chronic rheumatism. Those of Aix, in Savoy; of Cauterets and of Bagnères-de-Luchon, in the Pyrenees, and of Aix-la-Chapelle, are all highly recommended; and the two latter when there is a complication of skin disease. But if the stomach or liver is disordered, or the mucous membrane irritable, these organs must be first looked to, and the waters best adapted for them must be made use of. They have been pointed out.

The preceding summary of directions, so far as they relate to European waters, has been taken from Sir James Clark's recommendations, but our notice of the American waters is derived from other reliable sources.

The number of glasses of each water, the hours for taking them, the walks necessary before and after, the mode and times in which the bathing should take place, and the adaptation of quantity or of different springs to individual cases, had better be left to the direction of the attendants at the respective places.

One of the most celebrated watering places in the Mississippi Valley is that called the Blue Licks, in the valley of the Licking River, in Kentucky. From the water of these springs, common salt was formerly made; but the water is too weak to now allow of the profitable manufacture of this article for commercial purposes.

These saline waters contain a considerable amount of sulphureted hydrogen, which gives them a disagreeable taste and smell; when taken on an empty stomach, in the quantity of half a pint or more, they act as a laxative, and have often, on persons of constipated habits, a favorable influence. These waters are carried in barrels over much of the Valley of the Mississippi, and in many places extensively drank; and in many cases with advantage, particularly if taken on rising in the morning.

It is proper here to say that the German Kissengen water is manufactured at New York and at Cincinnati, and is equal if not superior to the original, as it is said to contain more carbonic acid gas. These manufactories were first established at Cincinnati by Dr. S. Handbury Smith, now of New York. We are happy to learn that this scientific gentleman has succeeded to his most sanguine expectations. He now sends this water over much of the civilized world. He also manufactures imitations of various other European waters.

CHAPTER IV.

ON DISEASES.

DISEASE produces fatal results chiefly in three ways: by fever, by inflammation or its results, or by morbid—that is, diseased—deposits, such as cancer, scrofula, etc. And of modes of treatment there are also three. Either we find ourselves obliged to adopt a lowering mode of treatment, as in some fevers and almost all inflammations, or we must try to give support to the powers of life by a treatment the reverse of lowering; or we must be neither too active in lowering nor in supporting, but adopt a waiting, watching method of treatment.

FEVER.

As fevers and inflammations are the most energetic and fatal enemies to life, we begin with the consideration of fevers.

Fever derives its name from one of its most prominent symptoms; namely, a sense of increased heat; and the reader should make himself well acquainted with its signs. Fever attends several diseases, as will be seen hereafter; but at present we mean to point attention to what may be called primary fevers, those which are not combined either with eruptions of the skin or with inflammation of any particular part of the body. Such fevers may be divided into six different kinds:

1st. Continued fever, which may be subdivided into inflammatory fever, mixed fever, typhus.

2d. Intermittent fevers, subdivided into tertian, quotidian, quartan.

3d. Remittent fevers.

4th. Infantile gastric fever, yellow fever.

5th. Eruptive fevers, such as small-pox, measles, scarlet fever.

6th. Hectic fevers.

The terms continued, remittent and intermittent, will be explained as we describe each kind.

The symptoms of continued fever were thus described by Cullen : It is a disease in which, after a precursory stage of languor, defective appetite, and muscular weakness, the pulse becomes accelerated, the heat of the body increased; there is great debility of the limbs, and a disturbance of most of the functions, yet there is no primary local disorder, nor are there well-marked remissions. The word remission means great diminution, or a temporary cessation of the febrile symptoms.

The symptoms vary in intensity, and in the periods of their accession, and local inflammations may supervene on the generally febrile state.

INFLAMMATORY FEVER, *technically* SYNOCHA,

is not often met with. It is defined thus: After a stage of chilliness or shivering, the heat of the body is greatly increased, the pulse is hard to the finger and frequent; red deposit in the urine; the mental faculties are but little disturbed, and sweating usually terminates the attack.

The initiatory signs are, feebleness, languor, and a sense of oppression, loss of appetite, sickness or vomiting, frequent and feeble pulse, to which succeed pain in the back, chilliness or shivering, paleness of the face, and puckered or goose skin. Then, after a few hours, the pulse becomes hard and rapid, the pulsations amounting to 120 or even 150; the skin is parched and very hot, its temperature rising to 102° , and even to 106° ; the head aches greatly, the temples throb, there is giddiness; the face is flushed, the tongue is white and dry; great thirst, constipation; the urine is scanty and red, and there is often a frequent desire to pass it; while the sight and hearing are extremely acute.

Delirium may come on after a few days, and all the symptoms are increased in intensity in the evening, and diminished in the forenoon.

This form of fever may terminate after some critical discharge, or it may gradually disappear, or it may assume a typhoid form. The amelioration may occur on or before the seventh day; but if it continue much longer than seven days, the inflammatory signs disappear, and gradually change into those of a typhoid character.

If a tolerably profuse sweating occur on the fourth or fifth day, the patient is soon relieved from his febrile state, although he may be left in a weak, languid condition.

Convalescence is slow, and relapses are not uncommon.

Causes.—A full habit of body, a strong muscular power, and what is called a good constitution predispose to the disease; while the exciting causes are sudden alternations of temperature, cold applied to the heated body, too violent exercise, intemperance, suppression of any accustomed discharges or cutaneous eruptions.

Favorable symptoms are perspiration, bleeding from the nose, eruptions appearing about the lips, a gentle looseness of bowels, the urine depositing a sediment like brickdust, the pulse becoming softer and more slow. The unfavorable signs are increase of intensity in the symptoms, fierce delirium, and laborious respiration.

Treatment.—The excessive action must be lowered by bleeding, purging, and by diaphoretic or sweat-inducing medicines.

If there is no medical man at hand to bleed, ten or twelve leeches may be applied to the temples, and, if necessary, repeated; but it is best to take blood from the arm, if that can be done, and the quantity of blood to be taken must be regulated by the effects produced, of which a medical man is the best judge.

A pill thus composed should be given, unless the bowels are very freely open:

No. 1. Of Blue pill.....	2 grs.
Calomel.....	1 gr.
Compound extract of colocynth.....	2 grs. Mix.

Or, if the bowels require more active treatment, take

No. 2. Blue pill.....	2 grs.
Calomel.....	5 grs.
Compound extract of colocynth.....	5 to 10 grs.

This should be followed in some four hours by this mixture:

No. 3. Epsom salts.....	1 oz.
Compound infusion of senna (see Formulæ).....	5½ oz.
Syrup of orange-peel.....	½ oz.

A third part to be taken every four hours until the bowels are freely opened. Or,

No. 4. Epsom salts.....	1 oz.
Fluid extract of senna.....	2 oz.
Syrup of orange-peel.....	½ oz.

To be taken as No. 3.

There is no better purge in this fever than

No. 5. Calomel.....	5 grs.
Jalap.....	20 grs.
Cream of tartar.....	40 grs.

Taken in water.

Saline or fever draughts should be given every four hours.

No. 6. Bicarbonate of potash.....	24 grs.
-----------------------------------	---------

Lemon-juice should be added until the bubbles of effervescence cease to rise.

Distilled water..... 1 oz.

Syrup..... 1 dr.

If vomiting occur, give draughts in a state of effervescence every four hours.

No. 7. Of Bicarbonate of potash.....	30 grs.
--------------------------------------	---------

Syrup..... 1 dr.

Water 1 oz.

Then mix in another glass, tartaric acid 25 grs. in water. 1 oz.

Pour the one into the other, and drink immediately. One drop of the medicinal hydrocyanic acid may be added to each draught if it can be got. The medicinal, not the strong acid.

Cold applications must be made to the head and temples, so long as they are grateful to the patient, and the body may be sponged with cold water, until the heat of the skin is lowered, or perspiration promises to ensue.

For drink, either of the two following:

No. 8. Cream of tartar.....	$\frac{3}{4}$ oz.
Sugar.....	about $\frac{1}{4}$ lb.
Dried lemon-peel.....	from $\frac{1}{4}$ to $\frac{1}{2}$ oz.
Boiling water.....	4 pints.

Or this:

Of syrup of lemons.....	3 oz.
Distilled or soft water.....	2 pints.

Nothing should be allowed in the shape of food.

If the disease does not give way after the first week, it may lapse into the next form—mixed fever.

When the feverish symptoms have left, we must be cautious to prevent a relapse, and especial attention must be paid to diet, allowing, first, arrowroot mucilage or arrowroot and milk, thin weak broth or beef tea with rice, increasing all nutritious matter very gradually, proceeding to white-fish, mutton, etc., until the usual diet can be borne without any bad effects.

If very weak, a tonic infusion will be of benefit.

1st. *Tonic Infusion.—Infusion of Calumba.*

- No. 9. Of calumba root, cut small $\frac{1}{2}$ oz.
 Boiling water 1 pint.

Let this liquid stand in a gentle heat for two or three hours in a covered vessel; when cold, strain.

An ounce or a wine-glassful of this, two or three times daily, may be taken. If the spirits are much depressed, add twenty or thirty drops of sal volatile to each dose, and if there be acidity after eating, add also twenty grains of the bicarbonate of potash to each dose.

2d. *Tonic Infusion.—Compound Infusion of Orange-peel.*

- No. 10. Of dried orange-peel $\frac{1}{2}$ oz.
 Recent lemon-peel $\frac{1}{4}$ oz.
 Cloves, bruised 1 dr., or 60 gr.
 Boiling water 1 pint.

Let these be set by in a gentle heat, covered over, for about half an hour; when cold, strain. The sal volatile or potash may be added to this if requisite.

3d. *Tonic Infusion.—Compound Infusion of Gentian.*

- No. 11. Of gentian root, cut small 2 dr.
 Dried orange-peel 2 dr.
 Recent lemon-peel 4 dr.
 Boiling water 1 pint.

Let it stand for an hour, in a gentle heat; when cold, strain.

The dose of the above infusions is from two to four table-spoonfuls.

The best tonics are made of Peruvian barks and some of the mineral acids, as,

- No. 12. Pulverized bark 1 oz.
 Infused for one hour in one pint of water.
 Add sulphuric acid 1 dr.
 Strain.

Give two table-spoonfuls three or four times a day; or, if the patient be very weak, one grain of quinine may be given every four hours.

It must not be forgotten that the inflammatory fever often lasts many days, and that one purge during this time is not enough. The bowels should be moved two or three times during the twenty-four hours. For this purpose there is nothing better than from 20 to 60 grains of the compound powder of Jalap and cream of tartar. Take in water when necessary.

MIXED FEVER, *technically* SYNOCHUS.

This is the kind of fever which prevails most generally, and the reason for denominating it mixed fever is to be found in the fact that it may begin with signs of considerable excitement, which, after a time, glide into those of a typhoid character. It may be said to be a compound of synocha and typhus.

We observe in most cases the usual preliminary symptoms—paleness of face, languor, loss of appetite, whiteness of tongue, alvine motions changed in character, perhaps wandering pains. Sometimes this fever sets in suddenly with a shivering fit, and headache more or less severe. Then the pulse becomes frequent, most so in irritable constitutions, pulsations varying from 100 to 120, and in severe cases to 140. The skin is hot and dry, the thirst troublesome; the tongue becomes dry, and is most frequently furred, though it may be for a few days clean and smooth; it is red about the tip and edges, with a streak, more or less broad, of fur in the middle. This streak is of a light brown color, which soon deepens.

This state may continue for six or seven days, when typhus supervenes if the fever has not yielded.

Causes.—Cold and moisture in a debilitated habit of body, and, beside these, contagion, which last we shall revert to under the head of typhus.

Treatment.—In mixed fever we must never forget that typhus is to be dreaded; wherefore we must content ourselves with remedies which will not materially impair the strength or lower power.

Few medical practitioners of the present day think that a fever can be cut short, as it is called, by any remedies known; but some have recommended an emetic for this purpose, and certainly if there have previously existed signs of a foul or loaded stomach, an emetic might be of service; if there is not much determination of blood to the head, as evidenced by beating of the arteries at the temples, violent headache, redness of face, injected eyes. Under these latter circumstances, an emetic should not be given.

To an adult give the following:

No. 13. Of powdered ipecacuanha.....	20 gr.
Tartar emetic.....	1 gr.
In an ounce or two of water.	

After it begins to operate, some diluent drink may be taken,

which will assist its action; but large quantities of fluid, taken into the stomach before the emetic has begun to act, will not only do mischief by distending the stomach, but they may prevent the action of the medicines altogether.

Gentle aperients (purgatives) should next be given, if the bowels have been in a costive state, before the invasion of the fever.

- No. 14. Of Epsom salts..... 1 oz.
Compound infusion of senna..... 6 oz.
Compound tincture of cardamoms... 3iv. = $\frac{1}{2}$ oz.

A fourth part every four hours till it operate. But an aperient (purgative) may be given with each saline draught till proper action of the bowels has ensued, when the saline draughts should be continued.

- No. 15. Of Bicarbonate of potash..... 24 gr.
Tartaric acid..... 20 gr.
Tartrate of potash..... 2 dr.
Distilled water 1 oz.
Simple syrup, or syrup of orange-peel... 1 dr.

Dissolve the bicarbonate in the water, add the tartaric acid, and when effervescence has ceased, add the tartrate and syrup.

As soon as the bowels have acted sufficiently, withdraw the tartrate of potash, and continue the remainder.

For the headache, apply evaporating lotions to the forehead, and if it be violent, six to ten leeches, according to the apparent strength of the patient, may be applied, though they are better avoided, when the streak on the tongue covers a considerable extent of it, and assumes more and more a dark brown color; for then typhus probably impends.

The headache is; however, sometimes so violent as to force us to resort to leeches. If so, apply them in parts where efficient pressure can be made on the leech-bites, should they bleed too profusely. Leeches will be again alluded to, and directions given how to manage them.

An evaporating lotion will prove grateful and soothing to the feelings.

Cooling and Evaporating Lotion.

- No. 16. Of rectified spirit of wine..... 1 oz.
Water..... 7 oz.

Apply cloths wetted with this to the forehead, temples, etc., and renew them as they become hot. For the spirit of wine, Eau de Cologne may be substituted.

Some medical practitioners have recommended our throwing repeated buckets of cold water over the patient, and consider this affusion a great agent in cutting short the fever at its commencement; but the author has never seen it effect this, for he believes, with many others, that we can guide a fever, though we can not cure it. He has seen great benefit derived from this affusion when the heat has been much and steadily above the natural standard; and in some cases, of eight or nine days' continuance, he has believed it had caused a critical change toward recovery.

The surface of the body may be sponged with cold water, so long as it remains hot and dry.

The drinks may be barley-water, toast-water, etc. (See MANAGEMENT OF THE SICK ROOM.)

Sometimes this fever is complicated with an inflammatory state of brain, chest, or abdomen; but such states will be mentioned in the portion devoted to typhus.

If the signs of high action; namely, a very hot skin, flushed face, injected eyes, and throbbing at the temples, seem to yield rapidly, or to change into those of nervous depression—to be shortly described—then for the saline draughts just recommended should be substituted any one of the tonic infusions, the compound infusion of gentian, of orange-peel, or of calumba.

To one ounce of each, or either of these, thirty grains of bicarbonate of potash or of soda may be added; and if much languor and depression prevail, twenty to thirty drops of sal volatile may be added, or these ammonia draughts taken instead of them:

No. 17. Of sesquicarbonate or bicarbonate of ammonia.....		Div. = 80 gr.
Lemon juice.....	3 oz.	
Or citric acid.....	96 gr.	
Or tartaric acid.....	100 gr.	
Water.....	3 $\frac{1}{2}$ vss. = 5 $\frac{1}{2}$ oz.	
Syrup.....	$\frac{1}{2}$ oz.	

A fourth part for a dose three or four times in the twenty-four hours.

If the draughts are desired to be taken while effervescing, dissolve twenty-four grains of the citric acid, or twenty-five grains of the tartaric acid in water, and add to it a fourth part of the mixture of ammonia, water, and syrup.

Of the lemon-juice, six drachms, or three-fourths of a fluid ounce, would be required to neutralize the ammonia contained in

a fourth part of the mixture. This is a very pleasant and grateful medicine, whether taken during effervescence or not.

In fevers of this character, one or two grains of calomel should be given every night; and the following has been found of much use:

No. 18. Opium.....	2 grs.
Calomel.....	4 grs.
Ipecac.....	4 grs.

Mix and make eight powders. Give one every four hours. These powders quiet the irritation, and often procure sleep. Sixteen doses may be given if the fever persists.

TYPHUS FEVER.

Putrid, or Spotted, or Maculated Fever,

is divided into the mild and severe species, differing only in the intensity of the symptoms.

This fever is a desolating scourge, and carries off many victims during the year.

Symptoms.—As the inflammatory fever may pass into the form of mixed fever, so this latter merges into typhus.

Typhus is characterized by a compressible, somewhat frequent pulse, with no great increase of the animal heat, extreme debility, and more or less disturbance of the mental functions.

General languor and lassitude; the tongue shows from the commencement a brownish streak down its middle, while its other portions may be of a dusky red; there is loss of appetite; thirst; drowsiness; sleep disturbed by dreams or slight wandering; the eyes lose their usual bright appearance, and present a suffused, muddy aspect; the bowels may be loose; the urine scanty, high-colored, with a bad smell; immoderate sweating, in some cases, which are succeeded by delirium; coma (a state of unnatural sleep); the stools are passed involuntarily; the extremities become cold; the hands seem to pick the bed-clothes; hiccup; there are startings of the legs and wrists; convulsions; and death closes the scene.

The symptoms during the first seven or eight days are those usual in fever, with disturbance of the nervous functions, and muscular disability or weakness superadded.

After this time, if not before, the teeth are incrustated with a dirty-looking deposit, very characteristic; the pulse becomes weaker and weaker, feeling to the finger as if a small column

of water fluctuated under it; the tongue is drier and browner; the headache leaves the patient, but the delirium, hitherto only observable at night, or after sleep, shows itself during the day; the voice is feeble; the power of swallowing difficult, perhaps lost; and the patient lies on his back, not having strength to turn on his side. The patient lies thus rambling and muttering continually, and though he may be roused for a time, yet he relapses. About this time, too, a rash appears of small blotches, roundish, and scarcely raised above the surface of the skin; with these, purple spots, like flea-bites, appear; but they are distinguished from flea-bites by the absence of the mark of the central puncture made by the flea. These spots vary in size from that of a pin head to that of a dollar. If there is copious sweating, an eruption may, in some few cases, be observed of small elevations of the cuticle, which, when viewed sideways, look like drops of water on the skin. These usually dry up, the cuticle is wrinkled, and a whitish powder remains.

During this stage, the second as it may be called, an inflammatory state of either head, chest, or abdomen may occur, and seriously add to the danger. These are called the consecutive or secondary affections in continued fever.

When the head is thus attacked, there are dingy redness of the countenance, heat of head; the suffusion of the whites of the eyes is greater than usual, and the stupor and delirious mutterings are more observable.

When the chest is attacked, there is a sort of suppressed dry cough, and the breathing is more impeded than usual. The stethoscope at once reveals to us the existing state. There may co-exist an ulcerated throat.

The abdominal attack is characterized by tenderness or pain at the pit of the stomach, and if the bowels are also suffering, there will be pain on pressure, with a discharge from the bowels of yellow, ochre-looking stools, and the belly is distended like a drum. The liver may be implicated, and jaundice present.

About the end of the second week the symptoms may become milder, and a favorable change may now take place, leading to recovery; if not, during the third stage, the patient lies at last almost like a log of wood, discharges of blood from the bowels occur, and the worn-out patient dies.

Relapses are frequent, and may easily be brought on by want

of care to avoid cold, improper diet, or any of the causes of fever. The constitution may be left in a weak state, the legs or ankles swelled, and other diseases may follow as sequels to this terrible fever.

Causes.—Those who are weak in body, and susceptible or irritable in mind, are disposed to suffer. All over-exertion of mind or body, the depressing passions, poor living, intemperance, dissipation, cold, wet, filth, and filthy exhalations from putrefying or decomposing animal and other matters—these last are the most fruitful sources of typhus—and persons have been seized soon after exposure to the miasms or vapors from cesspools, sewers, etc. The immediate or exciting cause is contagion.

Treatment.—The treatment of the first stage is that already described in mixed fever, only that the tonic infusions must be taken at a very early period.

The strength must be husbanded in every way, to enable the patient to go through the latter exhausting stages.

Cold douche of the head, evaporating lotion, ice to the head; affusion of cold water may be tried in the first day or two, cold sponging as long as it may be agreeable to the sufferer. The bowels should be opened by a pill, consisting

No. 19. Of Blue pill.....	2 grs.
Compound extract of colocynth.....	3 grs.

Then a Seidlitz powder, if the pill does not operate effectually. After these, purgatives need scarcely be repeated, but lavements or clysters of warm water may be occasionally thrown up to clear the lower bowel.

So long as the stage of excitement lasts, so long as great heat of skin, a tolerably strong pulse, beating at temples continue, the saline draughts may be given; but soon we shall observe the oncoming of symptoms indicative of the putrid tendency of the fluids; wherefore, as the weakness increases, we must add stimulants to the treatment, and lean wholly upon them.

No. 20. Of camphor.....	10 grs.
Carbonate of magnesia.....	25 grs.
Water.....	6 oz.

Rub the two first together, and add the water gradually. To these six ounces add half an ounce of spirits of compound sulphuric ether, and half an ounce of syrup, simple, or of orange-peel.

Of this, two table-spoonfuls may be given every four hours; but as the disease progresses, and prostration becomes more and more evident, we must give quinine.

No. 21. Of sulphate of quinine.....	2 grs.
Dilute sulphuric acid.....	5 drops.
Syrup, or syrup of saffron.....	1 drachm.
Water.....	1 oz.

Every fourth or third hour.

Great restlessness may be restrained by adding five or ten drops, or more, to one of the quinine draughts at night. If opium disagree, that is, increase the heat, restlessness, and muttering, administer a lavement of twenty drops of tincture of opium in water. Or, one or two grains of quinine, taken in pill or powder, every four hours, will probably answer a better purpose.

It should always be borne in mind that the stomach should be offended as little as possible.

If looseness of bowels exhaust, give astringent mixtures. (See DIARRHEA.)

According to the prostration, we must give diluted wine with sago, arrowroot, and even calves'-foot jelly, veal or chicken broth, beef-tea, etc.

Wine is seldom required during the first week, but it may be, and if it be given too soon, any clear-sighted observer will soon see the prejudicial effects in the increased heat, pulse, thirst, headache, etc. As to quantity, however cautiously we may begin, we must go on boldly, though always watching effects. Two or four ounces may be the first day's portion, but it may be increased to half a bottle, and even two bottles a day; and in extreme cases, a quarter or half-pint of brandy should be added.

The urine should be watched daily, as it is sometimes retained; when retained, it should be drawn off by an instrument.

The patient lying on his back motionless, often occasions a fretting of the skin, which ends in mortification sometimes, and proves a great danger to life, when the fever itself might not be fatal. To prevent this, a water-bed is effectual, or water-cushions, which, indeed, are preferable to the bed, because they are more portable. They can be filled with water, and emptied at any time. No one should travel or reside abroad without one of these cushions, which may make the difference between life and death. Painting the reddened back with the alcoholic solu-

tion of iodine once daily has prevented mischief; and Dr. McCormack recommended, in 1839, a varnish of camphor spirits, of lime, and of beeswax. The parts affected are to be coated with this—one layer, as soon as the former is dry, up to six layers. Thus, he says, a sort of cuticle is formed, and the inflammation is prevented from spreading.

To the secondary or consecutive affections, little can be done by the unprofessional reader, for a mixed treatment is often required, which demands long experience, and much judgment, too, even in the professional practitioner.

All excretions must be removed as soon as possible, and chloride of lime or soda solution should be in the bedpan, or it should be sprinkled over the floor, and cloths wetted with it hung up about the room. But, above all, pure air (if it can be got) and ventilation are essential; and cleanliness must be enforced in every possible way.

And, lastly, never give up a hope of recovery until death has closed the scene; for the writer can recall to mind cases where the relatives, and even in one case where his brother medical attendants, had refused to force down, as they said, any more medicines, wine, etc., when he has had to moisten the lips and the dry dark tongue before he put the quinine, mixed in a little jelly, into the mouth, to be washed down by wine and brandy mixed, and given very cautiously lest suffocation might ensue. Several such patients have been clutched, as it were, from the very grasp of death; and even were the power of deglutition gone, he would still try what might be done by lavements. One recovery amply repays all such labors.

BILIOUS FEVERS.

These fevers, as they appear in the United States, require a more extended notice than is given to other diseases which this work describes. European success will not warrant us in following the modes of practice recommended by the physicians of that continent. Ever since European writers have given an account of her history in a medical point of view, her people have been more or less affected by bilious diseases. In the neighborhood of Rome, these fevers are more prevalent now than they were during the prosperity of that city. This is the case with the

great Mississippi Valley, with the exception that these fevers are less prevalent now than they were during its first settlement, owing to the vast improvements in cultivation and drainage. The one has retrograded, the other advanced.

There are three forms of miasmatic fever which medical men universally recognize, with some others of less moment, or rather which only appear occasionally. The first in the series is the intermitting fever, the second the remitting form, and the third the malignant form, which, indeed, is little more than an intense variety of the remittent.

These fevers are found in all countries where there are marsh lands, extensive bottoms, with much decaying vegetable matter, and where there are swamps and stagnant water, and where the summer heats have a mean of 66° or even less. Now, as the summers of the United States, both on the Atlantic border and in the alluvial parts of the interior valley, up to the southern edge of the lakes, are so hot as to justify us in designating the climate as tropical during the warmer months, it follows that these fevers must exist. It is, however, true that their intensity diminishes as we ascend to the north. The great heat of Texas renders all the marshy parts of that State subject to autumnal fevers. The lower and richer parts of the State of New York have always been, more or less, subject to these fevers. As to the Pacific coast of this country, we have spoken in our dissertation on the Climate of the United States with all the distinctness which our knowledge will allow.

INTERMITTING FEVER.

This form of bilious fever, as well as that of the remitting form, nearly always begins during the summer or autumn, but it may and does occasionally begin during the winter or spring. These latter cases, however, generally occur in persons who have had one of these fevers during the preceding summer or autumn. We have, however, seen numerous cases begin in early spring, or even winter, where there had been no previous attack. These cases mostly occur in persons who have visited miasmatic localities in the preceding autumn. In such instances, the development of the disease is prevented by the cold of winter, but so soon as a warm and wet time comes, either in winter or early

spring, the malady exhibits itself, and mostly in the form of ague. If the subject be now situated in a non-malarial location, and is once cured, he will seldom have a reattack.

We shall consider these fevers in their different characters, beginning with the intermitting, then the remitting, and closing with the malignant forms of the last disease.

An attack of intermitting fever generally begins in the following manner: At first there is not much indisposition; the patient sleeps less soundly for a few nights; has a dry tongue on rising in the morning, and has occasionally pain in the head or loins, with some muscular soreness. In that form which begins during the morning, the duration or the return of the paroxysm may be looked for every twenty-four hours. When the chill begins, there are the following symptoms in nearly all the forms of the malady. First, there is gaping or yawning, with a shrunken condition of the face and hands, with a slightly bluish color and some roughness of the skin, and has a furred tongue. The patient now begins to feel chilly, the sensation of cold being felt in the back and limbs. His teeth often chatter, and he shakes all over. He finds that heat gives little or no relief to these sensations; being warmly covered is useless. He now passes urine often, and it is clear, but not in large quantities. The coldness of the surface increases for some time; but after an hour or two, sometimes less and sometimes more, there is a more tolerant feeling, less pain in the back is felt, and the general aching begins to give way. The pulse, from being small and quick, now becomes more regular—is fuller and softer; the face becomes flush, and presently the whole body has become warm, the skin smooth; the urine now diminishes and is higher colored; the head aches more or less, but is relieved eventually by sweating.

The hot stage is now arrived at, and will generally continue several hours. All the symptoms which the forming of this stage develops lasts through its period, but often, for a shorter or longer period, relief begins by the secretions of the skin becoming freer. There is felt on the forehead first a gentle softness, then moisture, and then sweating. When this last occurs on the forehead, there has been, in the mean time, a perspiration extended over much of the body, and eventually the sweating is established over the whole surface, which, after a few hours, relieves the patient of all fever, and even pain. The urine now

becomes freer, and deposits a white sediment on standing. The appetite soon returns, and the patient feels himself nearly well. He has now a few hours of respite; but at the same hour on the ensuing day, he has to go through the suffering that he had on the preceding day. But often the chill does not come on at the end of twenty-four hours, but is deferred until the end of forty-eight hours, which is called tertian ague, or that which returns every other day. Sometimes, but not often, the second chill does not return until the end of seventy-two hours. This form is called the quartan ague. There are other forms which once in a while occur, that our limits will not admit us to describe. Indeed, they are not of much importance in a practical point of view.

It is necessary, however, to state that frequently ague begins without any severe chill, there being merely blueness of the face and about the nails, or of the hands. These chills are found in delicate persons, or where there is a disposition to run into remitting fever; or where the chill is of a conjestive character. These symptoms are much more frequent now, except when attending conjestive cases, than they were forty years ago in the Mississippi Valley. Then the disease had more intense cold fits, with agues, than now; but as the comforts of civilization have spread, these severe symptoms at the outset of agues have measurably disappeared.

Treatment.—When the first chill occurs, and the fever following is in progress, it is almost impossible to decide how the hot stage may terminate; that is, whether the fever will go altogether off, or whether there will only be an intermission which will decide the case to be of a remitting form. It, however, now becomes proper to treat the case according to the symptoms or force of the fever; and if this be done with decision, what would be a remittent will almost certainly be an intermittent or ague. If the patient has a high fever—that is, great heat of the skin, with pain in the head, and the throbbing of the arteries and strong pulse at the wrist—he should be bled from the arm freely, taking one or two pints, owing to how well he may bear it; for no blood should be taken after a disposition to faint has begun. The operation should be performed when the patient is in a sitting posture; and before he lies down two or three gallons of warm or cold water ought to be poured over him. He should then be replaced in bed without being dried, and moderately covered. This

shower bath should be repeated every four hours during the paroxysm. When the subject is feeble, sponging under the clothes every few hours will answer, and in these cases blood-letting will be improper. Indeed, a large majority of cases will not require general bleeding. If, however, there is much pain of the head, the patient may be leeches or cupped about the head with great advantage. Should the headache be intense, a stream of cold water as large as a finger ought to be poured on the side of the head for a few minutes. The stream should be poured from a distance of eighteen inches. It may first be applied to one side and then the other. So soon as the patient has been bled and showered with water, the next step in the treatment is to purge him pretty freely. There is no purge better during the onset of this fever than ten grains of calomel and ten or twenty of jalap. A very good plan is to combine fifteen grains of calomel with thirty of jalap, and give half every hour or two in molasses or syrup of some kind. Should these doses not act, senna and salts may be given; half an ounce of the former and an ounce of the latter, with the same amount of manna, should be put into a half a pint of boiling water, and let stand half an hour, and then strain. One-half can be given at a dose, an hour intervening, which, with the other medicine, will be nearly sure to operate; but sometimes the stomach resists almost every purgative that can be given in the form of powder or fluid, in which case pills should be tried, of one grain of calomel with two of compound extract of colocynth. One of these may be given every hour until they act. Injections of salt and water may be administered every two or three hours in these cases. One tablespoonful of salt, and a pint of cold or warm water, should be thrown into the bowels at once. We have often given the following as a purge in these fevers: Eight grains of calomel, five grains of compound extract of colocynth, and the same amount of extract of jalap. These can be made into four pills. Two should be given, and followed by the remainder in two or four hours, should the first two not operate. Sometimes, when there is great obstinacy in getting cathartics to act, bleeding the patient freely will have the effect, particularly when fainting or an approach to it is effected. It is during the early stages of the fever when these means will, in the general, be found necessary.

When there is much disposition to vomit, the best means to

arrest it is to give one grain of calomel every half hour, with the eighth of a grain of opium, until the vomiting ceases. The opium may be dispensed with if there is pain in the head.

After the foregoing means have reduced the force of the heart and arteries, there is softness of the skin and eventual sweating, which soon relieves the patient of the paroxysm, and he is now left without fever but feeble; his appetite now returns, and he is able to attend to business or take exercise for some hours. This state, however, is soon followed by another chill, if no means be taken to prevent it. Many physicians were formerly of opinion that the second paroxysm should be allowed to occur before any means should be taken to prevent the recurrence; but since the discovery of quinine they have altered their opinions, and direct that a second paroxysm should be prevented. What, then, should be done to effect this? We think that it will be safe to administer four or five grains of quinine every two hours until twenty grains have been taken, beginning so soon as the fever has nearly subsided. In this way sixteen or twenty grains will be given in six hours, so that we are about sure to effect this before another chill will occur. If the patient has taken no mercurial during the paroxysm, it will be proper to combine two or three grains of calomel with the quinine, or ten grains of blue mass. Should the patient be feeble, two or three small glasses of wine may be given during the interval. If this course prevents the recurrence of the paroxysm, nothing more will be necessary for the present. But more of this by-and-bye. If now, however, the chill should return, we have again to meet this and the succeeding fever. There will now be, in general, less headache and less intensity of the symptoms. In a very large majority of cases it will be unnecessary to bleed. Leeches or cupping may be found useful, if the headache be severe, or if there be severe local symptoms in other parts of the system. The shower bath will now be proper, either cold or warm, or water may be used with the sponge. The internal medicines may consist of those that will moderate the heat of the skin, and soften the pulse. To do this the following may be given, and will, in nearly every case, do all that is necessary during the paroxysm:

No. 22. Calomel.....	6 grs.
Pulverized opium.....	3 grs.
Ipecacuanha.....	6 grs.

Mix, and make six pills or powders, and give one every three hours, until the fever subsides.

Or the following, from Dr. Drake :

No. 23. Spirits menderæi.....	6 $\frac{1}{2}$ oz.
Spirits nitrous ether.....	$\frac{1}{2}$ oz.
Camphorated tincture of opium and wine of ipecacuanha, each.....	$\frac{1}{2}$ oz.
Mix.	

One table-spoonful every two hours will seldom fail to bring on perspiration in due time, and may be used safely with or without the advice of a physician.

We have now conducted our patient through the second paroxysm, and it again becomes necessary to use the quinine a second time. This must be done by giving the same amount in the same way as before administered, and, as the recurrence is now better understood, it will be proper to give the last dose of the quinine about one or two hours before the expected chill. This course, in a large majority of cases, will prevent the ague fit.

When it is found that the ague is of a tertian form, or, in other words, comes every forty-eight hours, it will not be necessary to give so much quinine in so short a time, as the interval is then much longer. In most cases, two grains of quinine every two hours will be found sufficient to prevent the looked-for paroxysm. Care must be taken during the administration of quinine to keep the bowels in a proper condition. The patient should always have one or two stools every twenty-four hours; and if it is found that there is costiveness, half a grain of calomel with each dose of quinine will, most generally, make sufficient action. It occasionally occurs that diarrhea is connected with intermitting fever. When this is the case, the fourth of a grain of opium should be given with each dose of quinine, and about a grain of blue pill. By this management, the fever will, in almost every case, yield, and the patient become convalescent.

It occasionally and not very unfrequently happens that ague and dysentery, or flux, are united. Now, when this combination occurs it becomes necessary to cure the ague while the dysentery is existing. Quinine must be given with opium and ipecacuanha, so that four grains of quinine, with half a grain of each of the other two ingredients, may be given at every dose. The bowels, at the same time, must be kept open with Epsom salts, or small doses

of jalap or castor oil. Ten grains of jalap will often answer, given every two hours, until there is an evacuation effected different from blood and matter. When the chills have subsided, the dysenteric symptoms soon give way, and convalescence takes place. Complications of ague with other affections always make the disease more difficult to manage, and render it imperative to call on a physician.

That form of ague which recurs every seventy-two hours, or what is called quartan ague, is more difficult to manage than either of those which we have spoken of. There is often more intense fever, and it is more difficult to control. It often comes on at each paroxysm slowly, and the chill is prolonged beyond what we find in the other forms; and they seem to have a much greater tendency to cause severe congestions of the liver and spleen, particularly of the latter. In this form of the malady purging, and sometimes bleeding, will be proper, as in the other forms. Quinine must be given in larger amounts during the interval, but not in greater doses; these may be two, four, or five grains, and at intervals of four or six hours apart. Great care must be taken that the congestions spoken of do not take place, hence calomel purgatives must be repeated frequently; and if even salivation should come on, no apprehension need be felt, for it will always disappear in two or three days, and will be found to leave the patient saved from enlarged spleen or liver, or both. This is the form of ague which will be found benefited most by Fowler's Solution. Indeed, in all forms of this disease where it is obstinate, it is useful and almost indispensable to give some form of arsenic, and when combined with quinine, is of great use in chronic agues. From five to ten drops of Fowler's Solution, in a wine-glassful of cold water may be given three times a day. It should not be administered during more than eight or ten days. When there is a bloated countenance, feet slightly swollen, and some heat in the region of the stomach, the medicine must be withdrawn; indeed, in general, it is better to give it for some days with quinine, and stop before these symptoms supervene. Physicians often, with great propriety, administer this medicine until the specific effect is produced.

We have now considered the simple forms of ague, and their mode of treatment, but as it frequently happens that the disease returns at the end of about ten days from the last fit, it is proper

to consider what a patient in a convalescent state should do to avoid its recurrence. He should be advised not to be exposed to the rays of the sun, to night dews, to rain, nor to other improprieties tending to exhaust the system. Care must be taken as to diet, while a sufficient quantity of wholesome food should be taken. That which is difficult of digestion ought to be avoided; hence, fruits should be taken with great care, and all vegetables which are mostly pleasant to the taste without giving much nourishment, ought to be especially avoided. By taking these precautions, health is often reëstablished without any recurrence of the disease. One important matter should not be omitted by persons subject to returns of the ague; that is, the condition of the skin. In all cases where the subject can bear the cold bath, either in the form of plunge or shower, he should submit to it every day for some time; for, by this means, he will have the tone of the skin greatly improved, and it will be found that health will be much sooner established by this process than by the omission of this salutary auxiliary. Care must be taken not to advise very delicate persons to use cold baths, until it is known that they can bear them with comfort. When the patient does not become warm soon after the bath, it should then be advised that he use warm water with salt, which will be found to answer a good purpose.

We must now consider the graver form of the disease, which is called malignant intermittent, and which is frequently fearful in its consequences, causing death in a few hours.

This form of the intermitting fever begins nearly in the same way that others commence. The individual, an hour before the beginning of the chill, feels quite well, with the exception of some soreness of the limbs and pain in the back, but even these symptoms are frequently wanting. He, at the onset, yawns and gaps some, feels cold sensations along his back and running down his limbs. There is pain mostly in the head, and there is a general shrinking of the surface. The nose and ears are colder than is general in chills; so are the extremities; and it will be found that the blueness of the lips is intense, and often amounts to blackness. This last symptom indicates that a severe case is on hand. There is but little shivering, but the patient feels very cold, and yawns frequently. He is very weak; is dull and drowsy, which runs, if the case be bad, into profound coma, that in fatal cases remains to the last. The pulse is always weak and small at the

onset, and continues to get weaker for some hours, or, at least, for more than an hour. The urine is suppressed or retained in the bladder. The stomach is often sick, and sometimes vomiting occurs, rejecting most that is swallowed. The combination of all these symptoms precedes the congestive form of intermitting fever, because the blood leaves the surface in a much greater quantity than in the milder forms of intermitting fever, and is concentrated more in the internal organs. The brain is congested; so are the lungs, liver, and spleen, etc. It is the persistence of these symptoms which renders the disease dangerous; it hence becomes our duty to relieve or terminate this congestive condition of the blood-vessels, and conduct the patient safely through the fever that follows; and, finally, to prevent the recurrence of another chill of a congestive character, because the patient will survive but a very few of them. Indeed, we have never witnessed any disease, (cholera excepted,) of an acute nature, more appalling than this in its worst forms.

Treatment.—We have looked over many pages with regard to the treatment of this malady, and can only say that all the plans proposed and put in practice have but too often failed. The cold shower bath has been tried, and not without success, and this, too, during the cold stage; but it has often failed. Warm bathing with external heat, has been tried, and so has vomiting, and with but little success. Purging has had its advocates, but the success has not equaled the expectations of its friends. All these modes of practice have fallen short of the anticipations of their advocates. We shall therefore lay down the course which, in our hands, has been most successful, and which we think is founded in rationality.

When a patient is taken with congestive intermitting fever, he should be placed in bed and covered warmly, but not heavily. Next, bottles filled with hot water should be applied, or some other warm substance, but not so hot as to injure the skin. We have seen great injury done in this way in a few cases; indeed, during the time that the steam doctors flourished, there were hundreds and even thousands of patients lost by external heat, applied in various forms. The patient now being in a recumbent position, and covered as directed, with all the fresh air that can be admitted to him, no persons should be admitted but those who are necessary to his comfort. The medicines that should

now be given are, first, five grains of calomel and the fourth of a grain of morphine, in the form of a pill or powder, and if there be no coma, should be repeated at the end of an hour or two. In robust subjects, ten grains of calomel may be preferred to five grains; twenty-five drops of laudanum may be substituted for the morphine. A mustard plaster to the stomach will be right, with one to each ankle and wrist. Spirits of turpentine should be applied to the arms and legs as a liniment. Care should be taken not to apply whisky or brandy to the surface, as they invariably produce cold. Dry flannel and gentle friction will do more than any wet application. In this manner the surface must be treated until the heat returns.

It now is proper to give the best wine that can be got, and whisky or brandy punch; or these, in some form, should be given moderately every few minutes, until it is found that the surface is becoming warm, and the pulse more full and regular. To aid in bringing about reaction, twenty grains of carbonate of ammonia should be combined with an ounce of mucilage of gum arabic, and the same quantity of simple syrup. Then one table-spoonful should be given every hour during the chill, when it may be suspended. Cold water with ice may be allowed as drink, or lemonade would be proper. By pursuing this course, the patient will generally get safely through the cold stage. The fever will then follow, but, in general, will not be so fully developed as in cases of simple intermitting fevers. If reaction is without sweating, and there is much throbbing of the arteries of the temples, with heat of the scalp, it will be proper to apply cold water to it, and it may be proper to let a stream of cold water fall on the side of the head for a few minutes.

We attended, many years ago, two cases of this form of fever, where the excitement was great after the chills, with strong pulse and accompanied with profound coma. In these cases we bled largely, until the patients came to themselves, and were almost immediately relieved of the coma.

During the hot stage the same combinations recommended in the hot stage of the ague will be very useful, particularly that recommended by Dr. Drake.

The patient has now got through the chill and hot stage, and the sweating stage is on him; every moment is now precious. It is the duty of the practitioner to at once begin with quinine, and

if the patient has taken no mercurial during the stage of excitement, he should take, combined with the quinine, a few grains of calomel in the course of the interval. We now do not know how long the interval may last, because, if the chill should return at the end of twenty-four hours from the beginning of the first stage, but a few hours of respite can be expected, and, on the other hand, if the next paroxysm should come on at the end of forty-eight hours from the beginning, then more time is given to prevent its return; but we must not rely on this. It is now necessary that we should prevent a return, if possible. We must then give four or five grains of quinine so soon as the sweating stage has begun, and follow it up every two hours, until twenty or thirty grains have been taken. Should noise in the ears, with dizziness of the head, occur before the thirty grains are taken, it should be dispensed with. The patient should be kept as quiet as possible all this time, and be allowed pretty freely of good wine, or some whisky or brandy, every hour or two, which will much aid in preventing a second chill. When the patient has approached within an hour of the time when the chill began the previous day, he must confine himself to the bed, and take twenty-five drops of laudanum, and have moderate heat applied to his limbs until the time for the chill has passed. If, however, the chill should come on, the same course must be pursued as above laid down for the treatment of the first paroxysm; but if the chill does not occur, the bowels should be opened with a moderate purge. Two grains of calomel, with five grains of compound extract of colocynth, may be given every two hours; or the ordinary compound cathartic pills will do very well. Two or three will generally be found a sufficient dose. If there be no noise in the ears, or lightness of the head, it will be proper to continue the quinine, in two-grain doses, every few hours, until the next twenty-four hours shall have rolled round; and if then there be no chill, the patient should only take some wine three times a day during a few days, watching with care whether there should be more given about the end of the first ten days, when, indeed, it will be better, in all cases, to give quinine in moderate quantities, with alteratives, for two or three days.

It may be proper, in severe forms of this malady, to administer from forty to sixty grains of quinine during the interval. This should be done in severe cases.

It must occasionally occur that death has to be the result especially where there has been no proper medication at the outset of the disease. The symptoms in fatal cases become more severe as the paroxysm progresses. The limbs are cold, the eyes dull and red, the brain oppressed and in an apoplectic condition, with often yellowness of the skin, stertorous breathing, and retention of urine. Then comes involuntary evacuations of the bowels, and, during all this time, the tongue is brown or black in the center; the whole mouth dry, with a black matter gathered round the teeth, and the breathing becomes difficult. The patient throws his head back; his jaw falls; he swallows with difficulty, and, in a few minutes, death closes the dreadful scene.

REMITTING BILIOUS FEVER.

This form of bilious fever should possibly have been first treated of; but, in obedience to custom, we place it after the intermitting forms. It belongs to the same regions of the earth that the ague does. Sometimes, however, it is met with in drier and more elevated districts than this, and, in many situations, runs into a continued type; but where this is the case, it but seldom effects the mucous follicles; indeed, it has been denied that it ever does. In these doubtful cases, it mostly receives the name of typhoid, which, we think, is unfortunate, as the remissions are not watched with the same care that they would be if rightly understood.

The Remitting Fever is mostly found during summer and autumn. In the Valley of the Mississippi it occurs generally during July, August, and September. It would be unnecessary to again say that it is found wherever the intermitting forms exist in the United States.

The symptoms generally attending remitting fever are, first, a languid feeling during several days, with some thirst and dryness of the mouth, particularly in the morning. The tongue is furred. There is soreness of the muscles, aching of the back, etc. The fever now sets in by a moderate or severe chill, amounting sometimes to a rigor. In the robust, the chill is apt to be severe; in the delicate, and those not much exposed to the rays of the sun, it is milder. It may last from a few minutes to an hour or more. Even after reaction, chilly sensations often occur when

the patient moves. The hands and feet are cold, with depressed countenance, and with the heat of the ears, nose, and lips under the natural standard. The whole countenance has a bluish or slightly purplish color, especially the lips. The patient complains of aching of the limbs, but more particularly of the head, and this last symptom is apt to be severe and continuous.

After the continuance of the chill for some time, the face becomes flushed, the eyes more sprightly, or sometimes red and dull. The pulse now regains more than its natural vigor, and is increased in frequency, sometimes reaching 120, or even more, per minute. The body loses its shrunken condition, and heat is diffused over the whole surface. The fever may now continue from four to six, or even eighteen hours, which brings the patient to nearly the same time in the day when first taken. Should the fever last but a few hours, he has a longer interval. But not very unfrequently there is scarcely any remission at the end of the first twenty-four hours, and the fever recurs and continues for many hours, showing, however, a diminution of lesser or greater extent at the close of this exacerbation. In this way it may go on for nine or ten days, when it may gradually disappear. But this course is not the one that the fever generally pursues. There is, in mild cases, a greater remission, which is shown by a slight perspiration about the head first, then over part or all of the body. The pulse becomes more natural, the system cooler, the headache relieved, and a free or partial reestablishment of all the secretions and excretions. The fever in these milder cases often assumes the form of *ague*, which now makes it safe; but sometimes even *ague* is avoided, and this very often when the proper medication is used. There is one symptom which occurs, though not often, in this fever, that has been too much overlooked; that is general soreness, by reason of which the patient can not bear to be moved without great suffering. This symptom, however, belongs almost always to the malignant form of the fever, and is a very grave symptom. Added to other head symptoms is delirium, which, indeed, often belongs to this fever.

All this time the urine is deficient, except during the remissions, when it becomes more copious, and deposits a sediment, mostly of a whitish color. As has been remarked, the tongue is coated, especially in the back part and the center, and toward

the close of the disease, in bad cases, becomes dark yellow-brown. Black and dry sordes collect around the teeth; that is, black matter. Once in a long time, a little back of the point of the tongue, it contracts, extending to the end. This is called a pointed tongue, and is a most grave symptom. There is, occasionally, considerable costiveness, with or without vomiting; and then, again, diarrhea is present early in the malady. Toward the close, when a fatal termination is about to take place, there is picking of the bed-clothes, slipping down in the bed, with trembling of the limbs, and coma or stupor. The discharges from the bowels are involuntary; not unfrequently violent delirium, with stertorous breathing and death. Yet sometimes, when many of these symptoms are present, the patient will eventually overcome them and recover; but when they all exist, hope must be lost.

Treatment.—During the first chill, or when the state of excitement is on, it will be a most difficult matter to decide whether the case will terminate by a complete intermission, forming a case of ague, or will only remit, and soon reassume its former violence, and thus become a regular remittent. It, however, becomes necessary to treat the case according to the symptoms, or force, of the fever; and if this be done with decision, what would result in a remittent may be forced into an intermittent.

If the patient has high fever—that is, great heat of the surface, with strong pulse and severe headache—he should be bled from the arm until the point of fainting. To effect this easily, the patient should be raised in the bed; and as soon as circumstances will allow, he should be taken out of bed, and a gallon or two of cold or warm water poured over him, the stream falling on his head. He should then lie down, either with or without drying. This may be repeated every three or four hours during the paroxysm. But after a few days it ceases to have much influence; it can then only be used with advantage once in twenty-four hours. In most cases, simple sponging, when the patient is lying, will be best. A wet towel will answer every purpose. It should always be extended over the whole body. It is very common to wet the face and limbs, often without going over the whole body, which, in our opinion, is a great error; the body is the hottest part, and therefore needs the application most. By the judicious management of the external application of water, bleeding becomes unnecessary in most cases. After the influence of water

has ceased, it will be found to give much comfort to the patient to oil him all over with sweet-oil once a day. Before leaving the external use of water, it is proper to state that where there is much headache, and all has been done by the general application of water that is proper, there will be great benefit derived from pouring a pitcher of cold water on the head, as recommended in ague, etc. The patient will complain of this application much, but will soon feel greatly relieved. It must be recollected that bleeding is not always needed at the beginning of these fevers; but it is seldom that either the cold or warm shower should be dispensed with; and in the most feeble, either cold or warm water should be used, with the sponge.

Now, when the patient has been treated in this way, another thing must be attended to; that is, the state of the bowels. These are, in most cases, in a constipated condition, and are often moved with difficulty. The same course must be pursued to bring about purgation that has been recommended in intermitting fever. When there is a free action of the bowels secured, some medicine should be directed to bring about the natural action of the skin. One of the most agreeable ways to effect this is to give the effervescing draught, which can be made in the following way:

No. 24. Of bicarbonate of potash.....	2 drs
Water.....	4 oz.
Mix.	

Then of the tartaric acid, one drachm and forty grains; this put into four ounces of water. Add a tea-spoonful of sugar to the acid, or more, if the patient wishes. Of these mixtures, put two table-spoonfuls of each into separate glasses, and add water until, when brought together, they will make nearly a full glass. Now add one to the other, and drink when effervescing. This may be taken every two hours when the fever runs high. The common soda powders will answer nearly as good a purpose; but there is one effervescing draught that is better than any other; that is, one table-spoonful of lemon-juice put into two of water, then twenty grains of bicarbonate of potash, dissolved in three table-spoonfuls of water. Pour one into the other, and drink when effervescing. This may be given every hour or two with great advantage, particularly where there is much irritation of the stomach. The combination should be made pleasant to the taste by sugar or syrup. The following is strongly recommended

by Dr. Drake, in his great work on the "Diseases of the Interior Valley":

- No. 25. Spirits of menderæri..... $6\frac{1}{2}$ oz.
 Spirits of nitrous ether..... $\frac{1}{2}$ oz.
 Spirits of camphorated tincture of opium. $\frac{1}{2}$ oz.
 Mix, and give one table-spoonful every two hours.

It will often be proper to give ten grains of Dover's powder once a day. This, given at bed-time, often aids in producing sleep, which is a most desirable thing, if possible. Often, too, a combination of extract of hops and that of hyoscyamus, in equal portions, will be found to give great relief, in doses of three grains each, given at eight or nine o'clock in the evening. This prescription is especially useful in the treatment of female cases.

Should the fever persist, attention must be given daily to the condition of the bowels, so that they may act two or three times every twenty-four hours. This is best brought about by giving two or three grains of calomel every six hours; and should it not operate, then a table-spoonful of castor-oil may be given every afternoon; or ten grains of jalap will mostly answer a better purpose, which may be repeated every four hours, until it acts. The compound powder of jalap, given in twenty grain doses, will move the bowels as well, if not better, than any other purgative. The dose may be repeated every few hours, until the object is effected.

This is a description of what should be done in a simple case of remittent fever, and it very often comprehends all that will be necessary; still, cases occur where we have to use other means, or even to lay aside much which has been above proposed. We will meet with a case occasionally where calomel must be dispensed with, and then the blue pill must be resorted to, in such doses as the patient can bear. In these delicate cases a physician of skill should be consulted, and, if possible, have the treatment of the case.

This fever, when well treated, is very apt to gradually run into the intermitting form. Of course, it must then be treated as simple ague.

Sometimes the results will be different from that portrayed. Instead of a mitigation of the symptoms, the fever resists all the means that can be used. At the onset of this fever, if the pulse be very rapid, its motion irregular, and vibrates under the finger,

at the same time that the heart has a slightly tumultuous action when the ear is applied over it, without the healthy contraction of the ventricles, the case should always be considered as grave. The skin, in these, cases, is often slightly yellow, and sometimes has a deep hue; the eyes, too, are tinged with bile. There is frequently intense headache, with nervous twitching of the muscles of the arms, and the tongue has a tremulous motion, and a brown or black coating in the center, becoming lighter near the edge, and it is generally dry. The urine is scanty, and the evacuations from the bowels have a dark brownish color, and are offensive and thin. Occasional stupor is present, with delirium at times. When a number of these symptoms occur in the same case, there is much danger, and it needs the most determined treatment to prevent death. It is, however, fortunate that they are rare. They constitute what is called malignant remittents. This name characterizes their severity. The writer, during a long experience, has met with but few of them; but in the southern parts of the United States they are more common, and are often fatal.

At the onset of cases of this form of fever, a free dose of calomel of ten or twenty grains, with the same amount of jalap, should be administered, and, if necessary, repeated every two or three hours, until free purging is produced. These remedies may be aided by injections. Before the bowels have been freely moved, it is necessary to consider whether bleeding should be resorted to. If the pulse be strong and the head much pained, it may be best to bleed first, as is spoken of at the beginning of this chapter. Cupping or leeching would be found of great use in some cases. After this course of depletion by purging and loss of blood, it will be proper to pursue the treatment by giving broken doses of calomel and ipecacuanha. About a grain of each in the form of a pill or powder, with half a grain of opium, should be given every four hours, until there is a mitigation of the symptoms. The opium may be used or not, owing to the condition of the bowels or head. The effervescing draught should be given every few hours all this time. The cold or warm shower should be used in this form of the fever, as in other cases. If the force of the fever moderates, with a softened pulse and moist skin, it becomes of the first importance to give free doses of quinine until another paroxysm occurs, when it may be left

off for some hours. When it is given, it will be best to direct four grains, every two hours, until twenty grains be taken; or even more may be administered if the head does not seem affected by it. If there be mitigation of the disease by diffused perspiration and general relief, hope may be entertained, but we must not be too sanguine.

The membranes of the brain often, in these severe cases, where there is coma or intense headache, become inflamed or congested, and effusion occasionally occurs, and fluid is thrown into the ventricles of the brain. Of course, when this latter once takes place, death will result.

It will be found, when there is much disturbance of the brain, that blisters on the forehead or on the back of the neck will be useful. The hair should be cut close or shaved off; then cold applications can be used with advantage, or the scalp may be blistered. We have occasionally found the tincture of iodine useful, by frequently applying it to the scalp, through hair, or otherwise.

When the fever assumes a typhoid type, in its advanced stages, the strength of the patient must be sustained by a few table-spoonfuls of soup, every two hours; that is, if the stomach can bear it without revolting; other nutritious substances should be directed, such as sago, arrowroot, etc. In the mean time good wine must be given, in moderate quantities; and in its absence, whisky punch, or brandy and water, can be used. It should always be recollected that no more stimulants ought to be used than will keep the pulse at about the natural standard; for, by pushing them to excess, great harm is done. In the latter stages of fever, all treatment should be of the most gentle kind. Time must be given with those medicines that will neither debilitate nor over-stimulate.

If salivation occurs in the treatment of bilious fever, it may mostly be considered a good omen; but mercury should seldom be given for the purpose of effecting salivation, because, in many cases of fever, particularly of the continued type, no such result can be effected; hence mercury, in such cases, may be given to excess, and poison the patient. What should be done with this powerful agent is, to keep, by the use of it, the abdominal and other secretions in as healthy a condition as possible. Pretty free and frequently large doses should be given at the beginning

of these fevers, especially in robust constitutions, and those who are full livers. Nearly all persons connected with boating on the waters of the Mississippi need large doses of calomel at the beginning of their bilious fevers.

Sometimes remitting and intermitting fevers are combined with dysentery. In such combinations, it may be laid down as a rule that the dysentery will not get well unless the fever attending be first subdued. Then it is proper to treat the accompanying fever as though the dysentery was not present, by quinine, etc., and when the fever has given way, the dysentery will be easily managed. Yet the dysentery will have to be treated before the fever can be relieved, so that its violence will be mitigated; hence opiates, with ipecacuanha, will have to be given, accompanied with fomentations to the bowels.

When ague is not properly treated, or not treated at all, it runs into the remitting form. The chills come on regularly for some time, but as the patient becomes weaker, the chills become gradually weaker, until they are scarcely felt, or disappear altogether, and sweating ceases entirely, which had hitherto mitigated the fever every or every other day; but now the skin becomes dry, the liver enlarges, and the appearance of bile in the discharges from the bowels nearly disappears; the spleen, too, is often found congested, if not inflamed. The countenance now becomes bloated and sallow; the feet and legs begin to swell; and often general dropsy takes place, or rather what is called anasarca. This is occasionally accompanied with dropsy of the abdomen. The following case will show the results that occasionally occur in such cases:

A gentleman, fifty years of age, who lived in the western part of Cincinnati, and in a location where ague is common, took that disease, and called on an empiric of the homeopathic school to attend him. The empiric gave him powders through seven weeks, at the end of which time his chills had disappeared. His complexion was sallow; his lower limbs were swollen, and this effusion of water had spread throughout the cellular membrane; and, beyond this, two or three gallons of watery fluid had collected in the cavity of the abdomen. We saw and prescribed for this patient, and, after an attendance of some weeks, we succeeded in curing him; and now, at the distance of twelve or more years, he is comparatively a healthy man.

Similar cases to this occur almost every-where that ague is found. They grow out of neglect and bad treatment, or in localities where malaria has great intensity. They have to be treated with much care, even where there is no effusion of water in the belly; and where it is possible, so soon as they get well enough to travel, they should be sent to a region where ague never exists; there, with alteratives, they will finally recover. It must not be forgotten that in many swampy districts of this country chronic liver and spleen diseases continue almost through the miserable lives of a considerable portion of the inhabitants. In cases of liver and spleen diseases, and those other symptoms spoken of as following bilious fevers, the patient should take a blue pill of five grains, two or three times a week, and with them enough of some cathartic medicine to keep the bowels open, once a day; and if diarrhea should at any time occur, then half a grain of calomel and half a grain of opium, and the same amount of ipecacuanha can be taken after each action of the bowels, which will, in general, check the diarrhea after a few doses.

YELLOW FEVER.

The Yellow Fever is a form of disease in many respects different from either the graver forms of intermitting or of remitting fever. These last are found in all countries where there are rich alluviums, or bottom lands, and marsh or swampy localities, not only within the tropics but far into the temperate zones, as has been shown in the article on climate. The yellow fever seldom extends to the 40th parallel in either hemisphere; and never, only where the mercury reaches 79° or 80° of the thermometer, during a period of two or three months; hence, it will never appear at San Francisco, or indeed in but few spots on the north Pacific coast. When frost once appears, it disappears for the season. Within the tropics it begins earlier than north or south of them. At Vera Cruz it occurs in April, and at Havana in May, while at New Orleans never before July. This fever, too, is not known in all marshy or alluvial districts in hot countries, as the intermittents are. For instance, it is mostly known around the Mexican Gulf, on the Mississippi, in the West India Islands, in Western Africa, some of the cities of Spain, etc. It seldom or never is endemic or epidemic out of large towns or cities. East-

ern Africa has never been visited by this fever, neither have the East Indies.

The yellow fever seems to follow the tract of human intercourse in those localities favorable to it, and, in hot seasons, has often visited Philadelphia, sometimes New York, and has been as far north as Boston, and even as Portland, in the State of Maine. It but seldom attacks more than once the same individual. Infants are amenable to it, but when once subjected to it, they never or seldom have it again. Of persons who have lived in localities where it never or seldom appears, and visit points where it rages, a large number take it, and many fall victims to it, while those who are acclimated are seldom attacked.

It would seem from the information which we derive from Dr. Drake, that those patients who have been treated in hospitals are more apt to die than those who have not; for while nearly half die in hospitals, the rate of mortality out of them is often but one in eight, or even less. Patients with any disease, however, treated in hospitals, are less apt to recover than those treated in private practice.

Symptoms.—The yellow fever begins generally during the night, and is frequently ushered in by a chill or rigor; but this symptom is not constant. The most characteristic symptoms are pains in the back and limbs; the breathing is hurried, with hot and dry skin, frequent pulse, and flushed face; the eyes are red and watery, and the tongue moist, with a white fur; the throat is often sore, and there is sometimes nausea, with or without vomiting, and weight at the epigastrium. Cold drinks are grateful, and much desired. Costiveness is nearly always present, and there is great restlessness, with frequent delirium, and occasional stupor. In a majority of cases, the symptoms connected with the stomach do not become developed before twelve or twenty-four hours have expired, when they become very prominent. Burning pain is experienced, or weight and tension, or a vague sense of oppression. Headache is nearly constantly present; and when there is vomiting, it is painful. The febrile symptoms continue from a few hours to three days, and sometimes to four or five. Having run its course, the fever subsides, and a great amelioration ensues. The skin now becomes cool; the pulse nearly or quite natural; the stomach, too, is now quiet, and the respiration natural; the pains of the head, back, and limbs disappear, and the patient is cheerful, and now sits

up in bed, and says he is well. Sometimes convalescence dates from this condition; but alas! but too often it is a delusive hope; the great struggle is yet to come.

This cessation of fever is not equal to that occurring during remitting fever. The disease seems to be going on, notwithstanding the absence of fever. The struggle against the poison has ceased for a time, but, if you press on the epigastrium, you find great soreness, and the patient suffers. The eyes have now often lost their redness, but become yellow or orange-colored, which color gradually extends over the whole body. The tongue is now brown-black, or red and chapped. The pulse is slower than in health, and sometimes falls to forty beats per minute. The last stage is completely formed by the irritability of the stomach being reëstablished. This condition of the case may come during the first twenty-four hours of the remission, with a purplish skin and receded circulation from the surface, while the heart and great arteries beat tumultuously. The urine, at first scanty and high-colored, now becomes more copious and clear, but still is sometimes suppressed. At this stage of the malady, hemorrhage occasionally results, and is thrown out from different parts of the body, especially from the mucous membrane; blood is discharged from the gums, and fissures of the tongue, as well as from the back part of the mouth and nostrils. Sometimes it is vomited or passes by stool, or with the urine. Extravasations appear on the skin. The extreme distress and irritability is now replaced by apathy, and the countenance shows a quiet resignation or gloomy indifference. The pulse nearly ceases; the breathing becomes slow, with sighing and hiccup; the skin cold and clammy; the bowels discharge large quantities of dark matter, with a disagreeable odor, which also arises from the body; the eyes sink, the countenance collapses, and then death takes place either quietly or amid convulsions. Patients frequently die without either yellowness of the skin or black vomit. Yet these are mostly part of the phenomena; the latter does not, however, make its appearance in general until the second or third stage. At first the matters ejected are those that have been swallowed, and then a little bile. These are often acrid, so that they inflame the back part of the mouth and the gullet. The black matter, in flakes, is first thrown up in small quantities, but afterward increases, and frequently becomes enormous. This matter seems

to be sometimes retained long in the stomach for want of power to throw it up.

Treatment.—Many cases of this fever are not amenable to the influence of medicine, for, so rapid is its progress, that the patient receives a death blow at the very beginning of the attack. There are others, again, which are so mild that they readily yield to ordinary treatment, or the patient may recover without any treatment. Indeed, under every kind of treatment there are many deaths and many recoveries. In hospitals the disease is more fatal than in private practice. The fatal cases in hospitals range from one-half to less, but in private practice there is from one in five up to one in twenty-six lost, sometimes more, sometimes less.

Very early in the disease, when there is no irritability of the stomach, and no tenderness of the epigastrium, and where it is believed that the stomach retains much undigested food, it is proper to give a gentle emetic of ipecacuanha. When there is great heat and violent arterial action, with headache, etc., it is often best to bleed the patient, and sometimes freely; but to derive benefit from the use of the lancet, it must be used early, never, probably, after thirty-six hours, and always by the direction of a physician.

A mercurial cathartic, says Dr. Wood, is always indicated; from ten to twenty grains of calomel should be given without delay, and followed in an hour or two by an ounce of Epsom salts, or some other saline cathartic. In some instances, castor-oil may be given with advantage. We have heard it said that an ounce or two of almond oil, with the same amount of lemon-juice, aids much in effecting purgation. If the constipation remains obstinate, recourse may be had to senna and manna, with Rochelle salts. Half an ounce of the first, and an ounce of each of the latter, infused in half a pint of boiling water, can be given at two doses, an hour apart. In the meantime, one grain of calomel must be given, without regard to other medicines, every hour, until the bowels act. We have seen much, very much advantage from this medicine given in this way in cases of obstinate constipation. Injections should be directed every two hours, of a table-spoonful of common salt, or Epsom salts, in warm water. A pint or two of water should be used each time. After the bowels have been thoroughly moved, they should be kept open during the remainder of the fever by moderate doses of rhubarb and magnesia, which answer a good purpose. A tea-spoonful of the latter, with half the

amount of the former, given once in four hours, will answer a good purpose. Moderate doses of the saline cathartics could be used often for purging; magnesia, the seidlitz powders, a bottle of the citrate of magnesia would answer well for this purpose; injections, too, could be used.

It has been stated that a mercurial purgative should be given at the outset of the disease under consideration, and that, in constipated cases, it should be given every hour until the constipation is removed; but we have said nothing as to the continuance of the mercurial course until salivation is brought on. To effect this, one or two grains of calomel must be given every hour during the continuance of the disease—probably one grain as a dose is preferable to more. It will be found, when there is much irritability of the stomach, that the sixteenth of a grain of opium would be useful with each dose. It will be best to give this medicine in the form of pill. Should salivation come on, it may be concluded that the patient will get well with proper management. Often the disease is so violent that no mercurial effect can be obtained; still, it is best to continue the calomel to the close of the disease, whether fatal or otherwise. When inflammation of the stomach comes on, more calomel and more opium should be given. The dose should be doubled, and, in bad cases, a little more than doubled. In these cases, a large blister ought to be applied over the stomach; and when it has risen, powdered acetate of morphia should be sprinkled over the blistered surface at the pit of the stomach. The patient must be sustained by soups, or a little milk and water, taking care not to overload the stomach. A tablespoonful of milk, with one of lime-water, may sometimes be taken every hour. Should the system show signs of sinking, it will be necessary to use the best wine that can be obtained, occasionally brandy broths, etc. Stimulants are not specifics; all they can do is to prevent death until the system has worn out the disease; and we think these remedies are mostly pushed too far, and do more harm than good. Quinine will do better than any other tonic, given in doses of two grains every four hours. Of the stimulants, wine is the best. If any one of these remedies create burning, it must be laid aside. Opium, in this condition of the system, should be given freely.

It must not be forgotten that, in delicate constitutions, when there is much pain in the head, or tenderness of the epigastrium,

leeches should be used, or cups, during the first stage, especially where bleeding is inadmissible. In all cases when it is possible, a physician should be called at an early period of the disease.

It must be recollected that in all cases of yellow fever, the external use of cold or warm water must not be neglected at last during the hot stage. The patient should be showered with cold or warm water every three or four hours ; the former will do better than the latter with the robust, while the weak or delicate will be most benefited by the latter. After the stage of excitement is over, water will be of little use ; and when used, it should only be with the sponge, and only when there is considerable heat of the surface.

Great deference must be paid to those physicians who live far South, and who have seen much of this disease. Many of these, within the last ten or twenty years, have come to the conclusion that the mercurial treatment is not beneficial, and therefore have abandoned it, either altogether or in part. They tell us that patients who have been salivated, when laboring under the yellow fever, mostly get up slowly ; and the mortality is often greater when treated by mercurials, combined with other medicines, than when this powerful agent is left out of the prescriptions.

A number of distinguished physicians of New Orleans, and other parts of the South, have now, for a good many years, made quinine the principal medicine in the treatment of this disease. Among these we find Doctors Stone, Mackie, and Harrison, of New Orleans. The first of these physicians gives it in the first remission, even before the headache has subsided, and finds that it lessens the heat and force and frequency of the pulse, when given in this stage. He bleeds occasionally, and generally cups, to relieve local symptoms ; and purges moderately with calomel, etc., before giving the quinine. He then gives frequently five or ten grains of the quinine, until roaring in the ears takes place. He says he has seen black vomit occur after the administration of this medicine ; but that the number of instances is very small, and it seemed to be brought on by the imprudence of patients getting out of bed too soon.

Dr. Mackie bleeds and cups, and opens the bowels by injections, and then gives, at a single dose, twenty or thirty grains of the quinine, which, in general, he finds sufficient. If the stomach be irritable, he administers it by injection. He cups again, if necessary, and repeats the sulphate in smaller doses.

Dr. Harrison began the treatment by quinine in the same year with Dr. Mackie—that is, in 1839; and he is, or was, a zealous advocate of the course.

Now we feel strongly impressed with the notion that this practice is, taking it altogether, the most rational of any that has yet been proposed; and as it has been adopted by the distinguished physicians named, and many others, we can not help recommending it as among the very best plans that have yet been proposed. The success which we are informed has attended its adoption warrants us in this belief. It has, too, the advantage of being simple; even in the hands of a nurse it may be resorted to with safety. Every one acquainted with sickness knows very well what is meant by roaring in the ears, and also understands what local pain is, and that over or near it cups should be used; and when there is great fever, that the lancet may be safely used, at least at the onset; and this is especially so after the first twenty-four or thirty-six hours of this dangerous disease.

INFLAMMATION

is of two kinds—*phlegmonous and erysipelatous*.

By phlegmonous is understood an inflammatory circumscribed affection of the skin, with more or less of swelling, of bright red color, pain and distension; while erysipelatous is characterized by its tendency to spread over the skin or over the surface of membranes by its attacking different parts of the body, either simultaneously or by metastasis, and by its contagious and infectious character.

Phlegmon is seated in the true skin, at its inner surface, and it soon extends to the adjoining parts of the cellular membrane, the swelling thus extending in all directions. Shooting and throbbing pains, with a full, hard pulse, and great thirst, attend. It terminates either in resolution (gradual disappearance), or else matter is formed, or some affusion or adhesion, or gangrene results.

Causes, predisposing.—Too great fullness of body; excess in eating or drinking; the sanguine temperament; defective or disordered action of the liver, kidneys, or skin, whereby the blood is not adequately purified. The exciting causes are, chemical or mechanical injuries, over-exertion, etc.

Treatment.—Our object is to procure resolution as a termination—the happiest result. This is to be done very often by blood-letting, purgatives, cold applications, and low diet. The blood-letting should be according to the symptoms of vascular excitement, and if any one is near who can be trusted to bleed, blood should be taken from the arm until the patient feel rather faint. Then the calomel blue pill and colocynth pill, ordered in the treatment of inflammatory fever, should be given, and its free operation secured by adding one drachm of Epsom salts to each saline draught, to be taken every four hours, till the bowels are free. Then omit the Epsom salts, and continue the saline draughts, with one-sixteenth of a grain of emetic tartar in each draught, while the bowels are to be kept acting freely. Cold applications should be made by means of a single piece of fine linen, frequently changed, and the vapor must be allowed to pass off freely, or the cold application soon changes into a warm fomentation. But frequently cold applications either cease to give comfort, or they actually add to irritation, in which case tepid applications (85° Fahrenheit) must be selected; they do not stimulate like heat, and they do not occasion painful reaction like cold.

Leeches may be applied near to the inflamed part, after the blood-letting, if necessary; and if no blood be drawn by the lancet, some fourteen to twenty leeches should be applied.

If, in spite of all these, the part throbs, and perhaps the patient shivers, then suppuration is coming on. Then warm fomentations (of 92° to 98° Fahrenheit) are preferable; they relax the skin and soothe the pain. When the swelling shows a thin projecting part, it soon bursts, or it may be opened; the matter is discharged, and, after a few poultices, the part heals, if the patient's constitution be good.

During the whole time the inflamed part must be kept strictly at rest, and raised above the level of the body, if the swelling is situate in either of the legs or arms.

If these measures to promote resolution are not successful, and suppuration do not ensue, the part may terminate in gangrene or mortification; then the inflammatory redness assumes a darker tint, even to purple and blue—the heat, sensibility, and pain leave the part, though it may rather increase in size—and serum is effused, which serum sometimes exudes through the skin, and

forms blisters on the cuticle. If the gangrene do not stop, the parts become soft, cold, and corpse-like, emitting fetid odors, as from a dead body in a decomposing state; but if it be about to stop, the dark color is no longer diffused, but a healthy circulation is reestablished up to the very portion of the gangrened skin, and a bright red line, called the line of demarcation, separates the living parts from the dead.

Our treatment of gangrene must depend on the state of the patient. If he is young, and of vigorous habit, with pulse still full, hard, and strong, then still we must bleed, purge, and give salines, applying leeches and fomentations locally; but if the pulse be quick and feeble, and vital power seem deficient, then wine and opium, beef tea, and other fluid nutriment. For medicines, the bark, sulphate of quinine, ammonia:

No. 26. Of sulphate of quinine.....	2 grs.
Tincture of opium.....	2 to 5 drops.
Compound spirits of ether.....	$\frac{1}{2}$ dr.
Compound spirits of ammonia.....	$\frac{1}{2}$ dr.
Decoction of bark.....	1 oz.

Three or four times in the day. Or this:

No. 27. Decoction of yellow bark.....	$7\frac{1}{2}$ oz.
Sesquicarbonate of ammonia.....	$\frac{1}{2}$ dr.
Syrup	$\frac{1}{2}$ oz.

A sixth part two or three times a day. If these can not be readily procured, we would recommend

No. 28. Quinine, in the form of pills.....	2 grs.
--	--------

taken every three or four hours.

If necessary, a little opium may be combined with each dose.

The stomach, in cases of gangrene, is often irritable, and bears nothing well.

If the opium and wine are doing good, the delirium and restlessness are diminished. If these symptoms are increased, discontinue, or give less of the wine or opium. The dose of opium is forty drops of the tincture at night; and the wine can be tried as was recommended in typhus. For local applications, the yeast poultice, thus made, or one of the two following:

No. 29. Take of beer yeast, and water heated to 100 degrees, of each.....	5 fluid oz.
Flour.....	1 lb.

Mix the yeast with the water, and add the flour, stirring the whole.

The Charcoal Cataplastm.

No. 30. Of boiling water.....	10 fluid oz.
Bread.....	2 oz.
Powdered linseed.....	10 dr.
Powdered charcoal.....	3 dr.

Let the bread stand in a little water near the fire; then mix it. Add the linseed by degrees, stirring the whole into a poultice. To this mix in two drachms of the charcoal, and sprinkle the rest over the surface.

Cataplastm of Chlorinated Soda.

No. 31. Of boiling water.....	6 fluid oz.
Powdered linseed.....	4½ oz.
Solution of chlorinated soda.....	2 fluid dr.

Constantly stirring, add by degrees the linseed to the water; then mix in the chlorinated soda.

This last corrects the fetor of the discharge, or of the gangrened part.

ERYSIPELAS. (See DISEASES OF THE SKIN.)

INFLAMMATION OF THE BRAIN, OR PHRENITIS,

may begin with acute pain in the head and delirium, or with bilious vomiting; or with convulsions. The symptoms are sharp head pain, throbbing of the temporal arteries, brilliancy of eyes, contracted pupils, very red face; sound and light can not be borne; watchfulness, hot and dry skin, dry tongue with a white fur, violent delirium, great thirst, nausea, and vomiting; bowels confined. After two or three days convulsions are followed by stupor and low muttering; the eye loses its sight, and the pupils dilate; then palsy, twitchings of the muscles, involuntary passage of stools; urine retained, perhaps; cold sweats and death.

Duration to two or three weeks, and the terminations are recovery, palsy, or insanity.

Causes.—Coup de soleil, or exposure to strong heat, bearing down on the head, irritation of stomach, intemperance, suppression of habitual discharges, and of other diseases, dentition in some persons.

Treatment must be prompt and decided. Copious and repeated

bleeding from the arm, and blood is to be extracted unto approach of fainting; then cupping or leeches to the temples.

Active purging with the salts and senna mixture, or by a drop of croton oil put on the tongue.

Then give these powders—anti-inflammation powders:

No. 32. Calomel.....	℞ijss. or 50 grs.
Tartar emetic.....	1 gr.
Mix well, and add powdered gum- arabic.....	ʒj. or 60 grs.

Mix all well together, and divide into sixteen equal doses. One to be taken every four hours, until signs of the mercury affecting the system become manifest. These are a swelling of the gums, the upper edge swelling, and showing a white line; fetor of the breath, a coppery taste in the mouth, and flow of saliva.

Then discontinue the powders immediately, and give saline draughts, using a gargle composed of

No. 33. Tincture of myrrh.....	$\frac{1}{2}$ oz.
Of catechu.....	$\frac{3}{4}$ drs.
Honey or honey of roses.....	$\frac{1}{2}$ oz.
Water.....	7 oz.
Mix. To be frequently used.	

When the signs of excitement give way, and stupor and other signs of the second stage exist, a blister to the shaven head; and if there is great weakness, give wine, ammonia, with beef tea, etc.

During the earlier period, cold lotions to the head, or ice, are useful and agreeable.

The diet must consist strictly of drinks, and nourishing articles must be excluded.

The urine should be drawn off, if not passed every day.

Inflammation of the membranes of the brain requires a similar treatment.

ACUTE HYDROCEPHALUS, OR WATER IN THE HEAD. (See DISEASES OF CHILDREN.)

OPHTHALMIA, OR INFLAMMATION OF THE EYES.

This inflammation shows its itself under the forms of catarrhal ophthalmia, purulent ophthalmia, strumous ophthalmia, rheumatic ophthalmia, and gonorrhœal ophthalmia.

OF CATARRHAL OPHTHALMIA.

Symptoms are, redness of the whites of the eyes; flow of tears; the light causes annoyance; pricking pain, as if some foreign body were within the eyelids; eyelids glued together after sleep. The redness begins at the circumference, and proceeds gradually toward the center; if it pass over the transparent part (the cornea), the sight will be interfered with, more or less.

Slight febrile symptoms are the usual accompaniment of this state of things.

Causes are, cold air applied to the part; lime and other foreign bodies getting between the eyelids; exposure to a strong light; wet and cold.

This catarrhal form is distinguished from the purulent by its being milder and non-contagious, from the strumous and rheumatic by signs to be presently detailed. Unless the eyelids have become thickened from repeated attacks, this form soon yields to proper general and local treatment.

Treatment.—If there be any catarrh present, we must give what is recommended in catarrh, but in many cases local treatment will alone suffice. Warm fomentations of poppy-heads constantly applied with gentleness, a purging draught, and light to be excluded. As the inflammation diminishes, we should advise an eye-water of

No. 34. Nitrate of silver	1 gr.
Distilled water.....	ʒij. or $\frac{1}{4}$ oz.

Of this solution, drop one drop into the inner angles of the eyes about twice a day.

To prevent the eyelids from being glued together in the morning, smear some spermaceti ointment between the eyelids every night, or any other simple unirritating ointment.

If there be any headache or feverishness, leeches or cupping at the temples, or at back of the neck, with fever medicines, as in INFLAMMATORY FEVER.

PURULENT OPHTHALMIA OF ADULTS.

This form of ophthalmia occurs also in children. It is severe in both adults and children, but in the grown-up person it requires early and decided treatment, or vision may be lost.

This is the form of Egyptian ophthalmia.

There is intense inflammation over the white of the eye, and it is accompanied by a great deal of discharge. It sets in much in the same way as all inflammation does in the eye, with a sensation as if sand were there; then the vessels form rapidly on the white part of the eye, which becomes of a bright red, while the lids are swollen.

This form has a tendency to attack the deeper-seated structures, and if it does extend so deep, severe pain is felt, with a feeling of tension of the whole globe of the eye; the pain is aggravated at intervals, and is always more severe at night; some fever accompanies.

Causes are, the common causes of inflammation and contagion.

Treatment.—If the patient has been neglected, or if the disease be severe, loss of sight may be expected. Here blood-letting is imperative, and unto fainting, too. Then a dozen or twenty leeches should be applied to the temples, or around the orbit, and the bleeding encouraged.

The eyes should be often sponged, and the matter gently wiped off. The enlarged vessels on the whites of the eyes, and on the inner eyelids, may be scarified with a lancet-point or sharp pen-knife, and this often gives great relief. Warm fomentations, or cold light bits of linen, may be applied, and the most grateful application is to be preferred.

For the fever signs, saline draughts, and medicines for opening the bowels, are needful.

Diet, to be a decidedly low diet.

As soon as the redness and heat abate, inject between the eyelids a few drops of this solution every night, or night and morning:

No. 35. Of nitrate of silver	10 grs.
Distilled water	1 oz.

To prevent mischief from contagion, the patient must be kept alone; and all towels used by him must not be touched by any one else.

STRUMOUS OPHTHALMIA

is a form very frequently to be seen, and very obstinate it is to all remedies. It may attack all ages, though it is more frequently seen in children.

The constitutional marks of a scrofulous constitution will be detailed hereafter.

The signs of this form differ from those of catarrhal ophthalmia, by there being more lachrymation or weeping when exposed to the light, by little pustules being sometimes formed on the transparent part, and it differs from the purulent form by its minor severity, the absence of the violent pain and of the discharge.

Causes.—Similar to those of other kinds of ophthalmia, acting on a scrofulous habit of body.

Treatment.—The local treatment can be gathered from what has preceded—warm fomentations; but as the local excitement is accompanied by a want of power in the vessels, stimulant or astringent applications are soon admissible; leeches are seldom necessary. Wine of opium may be dropped into the eyes twice a day, or the nitrate of silver lotion. (See PURULENT OPHTHALMIA.) Only the solution must not be so strong as in that disease; five grains to the ounce of water will suffice in the generality of cases.

Blisters behind the ears, if the disease is obstinate; occasional aperients, and quinine pills, one grain in each, to be taken three times a day, are recommended, by one good authority, as of extraordinary efficacy; and the writer also has found them very efficacious.

RHEUMATIC OPHTHALMIA.

This inflammation is attended by violent pain around the orbit, extending downward, and even to the ear, and this pain is more severe at night; there is a yellowish-red tinge of the whites of the eye, and the cornea, or transparent part, may become cloudy. The feeling as if there were sand in the eye is not present, and the enlarged vessels run in straight lines from the circumference of the eye; the tinge is pink rather than bright red; as in the catarrhal form, there may attend more or less of fever. Sometimes, however, the catarrhal and this form are co-existent in the same person.

Treatment.—Bleeding from the arm, or by cupping, or by leeches, is necessary in the more acute cases. The bowels are to be opened by a salts and senna draught; then these draughts should be given:

No. 36. Wine of the seeds of colchicum.....	20 drops.
Bicarbonate of potash.....	20 grs.
Syrup.....	1 dr.
Water.....	1 oz.

Three or four times a day. For a night draught, from fifteen to thirty drops of tincture of opium should be added. If the inflammation continue severe, give

No. 37. Of Calomel.....	3 grs.
Compound ipecacuanha powder, or Do- yer's powder.....	5 grs.

every night and morning; to be given in thick gruel or mucilage. These should be continued till the gums begin to swell, or the breath to smell.

The forehead is to be rubbed every afternoon and evening with

No. 38. Extract of belladonna.....	3ss. or 30 grs.
Warm tincture of opium.....	6 dr.

Blisters behind the ears.

Dry warmth to the part; bags filled with hot bran, etc.

When the symptoms yield, give the tonic infusions, or quinine; quinine is to be preferred.

GONORRHEAL OPHTHALMIA

is caused by the application of gonorrheal matter. For treatment, see PURULENT OPHTHALMIA, only we may add twenty drops of balsam of copaiba to each saline draught.

Bleeding, both general and local, is the sheet-anchor in an acute rheumatism; then purging with calomel and compound jalapp powder.

Colchicum is often very useful. So is the iodate of potash, in doses of from three to five or ten grains, three times a day, given in sweetened water.

INFLAMMATION OF TONGUE, OR GLOSSITIS.

This is a rare disease, although it sometimes accompanies inflammation of the larynx or windpipe. It becomes very large in some severe cases, and fever of high excitement attends.

Here no medicines can be swallowed. Blood must be drawn from the arm, and leeches applied under and close to the lower jaw; but the remedy which seems to have averted suffocation sometimes, is scarifying the tongue, or making a tolerable deep incision into it.

INFLAMED TONSILS, OR TONSILLITIS, OR CYNANCHE TONSILLARIS.

This disease occurs not unfrequently in this climate, and, on inspection, we find the tonsils swollen, and the whole circumjacent surface very red and swollen. It begins with chills, etc., as fever does. Swallowing becomes first difficult, then at last impossible. The pain shoots into the ears, a thick ropy mucus and saliva are observed in the mouth. The tonsils are so swollen in some cases as to meet together. Ulcerations are formed in various points.

Causes.—A scrofulous habit—the usual causes of fever and of inflammation. The same persons are often attacked by this disorder. Such persons should avoid standing on wet ground, and also cold and humidity.

Treatment must be vigorous; blood-letting, according to the intensity of the febrile symptoms, and to the powers of the patient. The back of the neck may be cupped, or leeches applied there, and the tonsils themselves scarified. Active purgation.

A state of nausea (feeling of sickness) should be kept up by dissolving

No. 39. Tartar emetic.....	2 gr.
Water.....	4 oz.

and a tea-spoonful of the solution, given every hour, until the nausea has been maintained for about twenty-four or thirty hours. Then probably the state of excitement and the local swelling will have abated.

In slight cases, the measures need not be so vigorous. After a purgative, saline medicines should be given, and poultices applied as near as possible to the affected parts.

A blister to the throat, or back of the neck, is useful after the high excitement and inflammation have abated.

If matter form in the tonsils it will burst, or the collection may be opened by the lancet.

For the MALIGNANT SORE THROAT, see SCARLET FEVER.

MUMPS.

This somewhat specific inflammation, mumps, or inflamed parotid gland, may occur epidemically, and is capable of being propagated by a peculiar contagion.

Slight febrile symptoms are first observable, then stiffness of the jaws, and then a swelling in one or both parotid glands. The swelling increases till about the fourth day from the commencement of the disease, and the gland is swollen firm, and tender to the touch; the skin over it does not change color, or else is only slightly inflamed. All the movements of the muscles of the jaws are very painful, mastication and swallowing any thing are dreaded, the attending fever is mild, though nervous irritability and restlessness attend some cases.

Soon after the fourth day the swelling begins to decline; then the breasts in females, and testicles in men, become swollen and hard. There is a gentle sweat on the skin, and the urine shows a deposit of red sediment.

Children and young persons are most liable.

Treatment.—Avoid cold; keep the parts warm. The bowels should be kept open, and perspiration be encouraged by warm drinks.

INFLAMED LARYNX, OR LARYNGITIS.

The ordinary precursory symptoms of fever are followed by sore throat, hoarseness, and dry, husky cough, coming on by fits of coughing. There is pain at the top of the windpipe, increased by pressure; constant hawking of a thick mucus; swallowing is painful. If the tongue be depressed, we can observe the epiglottis, or valve, at the top of the windpipe, red and swelled; hot skin, and other signs of fever. Then more serious symptoms set in; paleness and anxiety, expansion of nostrils, whispering voice, terrible efforts to breath; the pulse becomes small and rapid; there is restlessness and anxiety, with a fear of being suffocated. Delirium and coma follow on, and death ensues.

This disease may be fatal in from twelve hours to four or five days.

This is one of the most terrible diseases that assail humanity, and the sufferings of the patient, the protracted wheezing of the inspiration, the paroxysms of harsh and husky cough, and the vain, agonizing attempts to obtain one good full inspiration, are painful to behold.

The Father of his Country is said to have died of this disease.

Causes are the same as those of common inflammation. There seems to be a disposition to a recurrence of the disease, if a

person have once recovered from an attack. Any ulcer about the air-pipe may stir up an attack also, under favoring circumstances.

Treatment.—Whatever is done must be done promptly and vigorously; for, although the inflammation is confined to a very small surface, yet that surface is situated in a part essential, indispensable to life. Thus, if hoarseness and pain in the region pointed out occur, immediate attention should be paid to them. If but for a short time the disease continue unrelieved, the patient dies, poisoned by his own impure blood.

Venesection, the most vigorous that can be borne by the person, must be performed, and repeated; then leeches applied close to, but not on the part, and a blister to the upper part of the chest.

For medicines:

No. 40. Calomel.....	ʒijss=50 grs.
Tartar emetic.....	1 gr.
Mix, and divide into sixteen doses.	

Give one every second or third hour, until the swelled gums or fetid breath tell us when to stop.

Blood-letting, however, will perhaps only accelerate death, if performed after the full, bounding pulse, the hot skin, and other signs of inflammatory fever have given way to signs that show the patient's blood is no longer purified, and is overpowering the vital powers; wherefore, a cold skin, a small feeble pulse, blue lips, and leaden face, with wavering mind, indicate that the term for blood-letting is gone by. What, then, can be done?

Why, the air-passage must be opened; an incision or slit must be made in it. This sounds like directions for cutting a man's throat, yet nothing proves more salutary, when happily successful, and the patient may thus be saved, for whom there was previously no chance of life. The incision should be made by the surgeon in the medium line, an inch or two below Adam's-apple, as the projection in man's throat is called.

CROUP, OR CYNANCHE TRACHEALIS.

As this disorder attacks children most frequently, see DISEASES OF CHILDREN.

CATARRH, OR COMMON COLD,

is an inflammation of the mucous membrane, which lines the air-

passages and the interior of the nostrils; but the complaint differs much, according to its site, as to danger.

When seated in what is called the Schneiderian membrane, which lines the nostrils and frontal sinuses, it forms what is called cold in the head, and what many call a snivelling cold.

This is very common in our changeable climate, and its symptoms are familiar to every one.

Treatment.—This cold may be stopped sometimes at once; and three or four days of annoyance may thus be saved, by taking, when going to bed the first night, from fifteen to twenty drops of tincture of opium or of laudanum. Some have succeeded in cutting short the attack by taking some hot wine negus; perspiration has followed, and the cold has vanished. When the feverishness has gone, and the expectoration is thick and loose, we may often expedite the cure by a good dinner, and a glass or two of wine; but we must be cautious, if the person is of plethoric habit, prone to inflammation of the chest, or to consumption.

The patient should keep in the house, or, if very feverish, in bed. He should live upon slops; take James's powder, put his feet and legs into hot water, and take an aperient. A better preparation than James's powder is, tartar emetic, two grains, and water, three ounces. Take of this one tea-spoonful, every two hours.

A dry method of cure has been proposed by Dr. C. Williams, which is to act by cutting off the supply of watery materials to the blood. The wants of the system take all that can be spared from the circulating mass of blood, and nothing is left to feed the secretion from the nasal membrane; in short, the inflammation is starved away.

But to follow up this plan requires great energy and self-denial; for we are so used to our cups at breakfast and tea-time, that to have to confine our daily consumption of fluid to one table-spoonful of tea or milk, for the morning and evening meals, seems a task beyond our powers. The great advantage of this plan is that the person may go about and transact business the same as usual.

The best advice that can be given, is to recommend persons who frequently suffer from these colds, to habituate themselves to the cold shower bath, or to sponging with cold water. The surface of the body is thus accustomed to a lower temperature

than it is likely to meet with during the day. But these baths or spongings should be tepid at first, and begun in the summer, and the water of gradually-reduced temperature should be used until the cold water can be borne. This is the best preventive of colds.

BRONCHITIS, OR COLD AND INFLAMMATION OF THE MUCOUS MEMBRANE OF THE CHEST.

The Suffocative Catarrh of Children.

This is a threatening and often fatal disorder, especially fatal to the extremes of life, to young children and old men. Sometimes it rages epidemically, and then is called influenza; but as influenza has some features peculiar to itself, it will be described separately. Bronchitis is inflammation of the mucous membrane lining the air cells in the chest.

Symptoms.—Signs of fever, headache, inflamed eyes, oppression at the chest, and impeded respiration; pains about the chest; expectoration, and the fluid ejected by a cough is a glairy mucus, which is transparent, and is so adhesive that if poured from one vessel to another, it will draw out like melted glass, and the more viscid, the more sticky these sputa are, the greater is the existing degree of the inflammation. Some froth is mixed with the sputa, and they may be streaked or dotted with blood. But after a time the mucus is no longer transparent; it becomes mixed with opaque, yellowish, whitish, or even greenish colored masses, at first few in number, until the whole of the sputa consist of them. These denote a giving way of the inflammation, the difficulty of breathing and the feverish symptoms diminish, and recovery ensues, unless from some cause or other the inflammation is lighted up again.

When recovery takes place, the favorable change occurs from the fourth to the eighth day of the disease.

The disease may be of acute or chronic nature; the latter is attended with the following symptoms:

It may follow the acute form, or it may commence as a catarrh, or common cold, the signs of which have been described; they return at first every winter; then they encroach upon the warmer seasons, until the patient, mostly middle-aged or old, is never free from considerable difficulty of breathing, while more

or less copious expectoration of various colored masses is constantly going on. This state has been called humoral, or moist asthma, or senile catarrh; but asthma is a peculiarly marked convulsive disease, a disease of the nervous system. In some patients, perhaps from co-existent irritation of stomach, a paroxysmal or convulsive state has been superadded to this chronic bronchitis, when it closely resembles humid asthma.

Treatment.—Blood-letting from the arm is not required unless the fever symptoms run high. Leeches may be applied to the chest; also a blister, but be careful not to put it over the leech-bites.

Saline draughts (No. 3) every four hours, and to each draught about the sixteenth of a grain of tartar emetic may be added. To do this, dissolve one grain of tartar emetic in two ounces of distilled water, and add one drachm of it to each draught.

Diluent drinks at pleasure; barley water, or barley water gently acidulated with syrup of lemons, or one of the drinks hereafter to be mentioned.

But if the hot skin and high fever symptoms, with increasing difficulty of breathing, lapse into dark-colored lips, and the expectoration continues sticky and tenacious, with difficulty of ejecting or bringing up, give

No. 41 Calomel.....	24 grs.
Tartar emetic.....	1 gr.
Powdered gum arabic.....	1 dr.

divided into twelve powders. One every four hours; but watch for redness or swelling of gums, fetid or coppery-tasted breath, and stop the powders immediately; order a myrrh gargle; and if the powders purge, give mixture against diarrhea. (See DIARRHEA.)

These powders save the strength, while they combat the inflammation. The writer has witnessed recovery in many very alarming cases when these powders have been so given. When convalescent, and as the fever yields, the thirst, etc., give supporting broths, beef tea; and if great languor or prostration occur, wine and stimulants must be resorted to.

The chronic form cuts off many old people, though by slow degrees. The treatment must be by expectorants and tonics, repeated blisters, mustard poultices, etc.

No. 42. Of Ipecacuanha wine.....	12 to 20 drops.
Tincture of henbane.....	20 to 30 drops.
Syrup.....	1 drachm.
Tincture of opium.....	5 drops.
Water.....	1 oz.

every fourth hour.

But opium must here be given very cautiously, for it restrains the secretions always; and the expectoration must be encouraged and rendered free, or the patient will die. In proportion as the lips are livid, the surface cold, and the strength reduced, we must be cautious as to opium.

INFLUENZA

is a cold, with more or less inflammation of the mucous membrane lining the air passages of the lungs. It prevails epidemically, but is sometimes caught by infection.

The symptoms are those of cold and subacute bronchitis, mixed in varying proportions. The peculiar features are a languor and nervous depression, which are very remarkable, while there is coldness of the skin, or else cold perspiration. The symptoms are those which have already detailed in cold and in bronchitis.

Causes.—Special infection from atmospheric causes, also contagion. This epidemic has often been preceded by fogs, and follows nearly the same route as the Asiatic cholera does.

Treatment.—Here our treatment is varied, according to the prevalent state of excitement or depression. The saline draughts and a dose of James's powder every four hours; but the author has found the greatest comfort afforded to patients by adding to each draught from fifteen to thirty drops of sal volatile. The cold feelings and cold damps on the skin are thus very much relieved.

The late Dr. Thomas Davies saved many persons laboring under this disorder in its severer form, from mercurializing the system, by giving calomel, one, two, or three grains, mixed with tartar emetic one-sixteenth of a grain, the strength being supported at the same time. This should be borne in mind in threatening cases. The author has not alluded to the use of auscultation by the stethoscope, as he is not addressing medical men.

PNEUMONIA, OR INFLAMMATION OF THE LUNGS.

The usual precursory and other signs of fever, or pyrexia, as it is called, are high fever, hot skin, headache, quick pulse; and the peculiar signs are, pain in the chest, dull rather than acute; cough, dry and short; expectoration, scanty; and mucus, which is soon tinged with blood, and becomes rusty colored and thick; the breathing quick, from fifteen up to four or five and thirty in the minute.

This disease may decline about the fourth day, or it may continue for twelve or fourteen days; but if the characteristic symptoms increase after the tenth day, and the difficulty of breathing, with livid lips and paleness of skin, the event is likely to be unfavorable.

Treatment.—Blood-letting, if it can be done, is the sheet-anchor, and it should be repeated two or three times within the first thirty hours.

Leeches in some quantity; a blister; the calomel and tartar emetic powders (No. 41,) to be similarly watched as they were directed to be; saline draughts and drinks.

As soon as heat of skin and quick, full pulse subside, with free expectoration and greater ease in breathing ensue, a gently-supporting system is necessary. For a state of prostration, wine and expectorants, beef tea, etc.

INFLAMMATION OF THE PLEURA.

The pleura is a membrane lining the inside of the ribs, which invests also the lungs.

The usual signs of fever, with a sense of weight about the chest. The distinguishing symptom, in conjunction with the fever state, is a sharp pain in the side, spreading over more or less of the side, front, and even back. This pain is so sharp as to induce the sufferer to use the lungs as little as possible in breathing, and the breathing is a good deal effected by forced action of the muscles covering the bowels; the cough is short and dry, and the countenance is anxious; the pain is increased by inspiration, and by the cough.

About the fourth day the pain may be greatly abated, and the fever diminish.

Treatment.—Here, again, the treatment must be active, and not a moment is to be lost, or else the inflammation may end in the opposing surfaces of the membrane being glued together, or by the pouring out of a serous fluid, forming water in the chest, or of matter. The system should be put under the influence of mercury by the powders No. 41. Blood should be taken from the arm, even to fainting, or the blood should be suffered to flow until there is relief to the pain and breathing.

Leeches, from twenty to thirty, to the side affected.

Saline draughts, drinks, and low diet.

INFLAMMATION OF STOMACH, OR GASTRITIS.

This disease generally is caused by some irritation applied to the coats of the stomach. The symptoms are of the usual febrile character already detailed; but there is a sharp, fixed, burning sort of pain at the pit of the stomach. It is increased by pressure, by whatever is taken into the stomach, and, in some cases, by the movement of respiration. There is frequent vomiting, every thing swallowed being instantly rejected. The accompanying fever is of a low type, even though the inflammation continues; pulse is small and weak at a very early period. The strength is much depressed, skin damp, and features shrunken.

Life may be destroyed in from twelve to thirty hours, and during the last moments great restlessness, anxiety, hiccup, and drum-like distension of the skin at or about the pit of the stomach.

Causes.—Acrid or poisonous substances taken into the stomach; drinking cold liquids when the body is heated, and in a state of exhaustion.

Treatment.—Notwithstanding the seemingly small, feeble pulse, venesection must be performed; the pulse will rise, or appear to beat fuller, as the inflammation is relieved. Then apply leeches over the pit of the stomach, and encourage the bleeding.

Ice, or iced water, in small quantities, to be swallowed

Keep the bowels open by clysters of warm water; or, if the bowels are confined, with clysters of warm water with Epsom salts, half an ounce dissolved in each.

Injections of starch or gruel, four ounces, and thirty or forty drops of tincture of opium, may check the vomiting; so will one drop of hydrocyanic acid, in about three tea-spoonfuls of water.

Gruel, linseed tea, barley-water, etc., for drinks, in very small quantities at a time.

There is a subacute gastritis which will be noticed under **INDIGESTION**.

INFLAMMATION OF BOWELS, OR ENTERITIS.

This may begin with signs like those of colic, but very soon those of fever set in; furred skin, thirst, etc. The characteristics are acute pain, increased by pressure, which mostly relieves colic pain, nor does the pain relax or intermit, as in colic; the pain, too, is increased by any movements of the abdominal (belly) muscles, wherefore the knees are drawn up to relax those muscles. We have seen, in pleurisy, that the patient breathes by the abdominal muscles, and the ribs are as motionless as possible. Here the breathing is by the chest muscles as much as possible; in colic, the mode of breathing is not altered, and the patient tosses and turns about, whereas in enteritis he lies as quiet as possible.

There are nausea and vomiting to a distressing degree, both when any thing is admitted into the stomach and when the stomach is empty; costiveness.

If the pulse at the outset is full and strong, it soon becomes small, and like a wire under the finger; it intermits; the features seem to shrink; the legs grow cold, hiccup comes on, and drum-like belly; the pain relaxes, but cold sweats break out, and death soon terminates all suffering.

Treatment.—Notwithstanding the small pulse, bleed and leech. As all liquid medicines will increase the vomiting, give no draughts, but

No. 43. Of Calomel	5 grs.
Powdered opium.....	1 gr.

every hour until five grains of opium shall be taken, and then repeat the dose every four hours, watching the effect.

We must try to remove costiveness by lavements of warm water, and not to give any aperients by the mouth until the acute stage has passed away.

If we see a case where the small weak pulse is accompanied by drum-like distension of belly, by coldness of skin, etc., we must not bleed, nor lower the powers at all.

INFLAMMATION OF THE PERITONÆUM.

The peritonæum is a membrane lining the interior of the muscles over the abdomen, or belly; but the symptoms and treatment are nearly the same as those of enteritis.

INFLAMMATION OF THE KIDNEY.

With the usual febrile signs, there is pain in the back corresponding to the region of the kidney, shooting down to the groin; the testicle is sometimes drawn upward; the pain is deep-seated, dull, increased by firm pressure, by the erect or sitting posture, and sometimes by coughing or sneezing. The sufferer lies on the affected side, with the corresponding limb drawn up to the affected side; nausea and vomiting, and frequent calls to make water, which at first may be bloody and high-colored, then becomes pale; bowels are confined; an anxious countenance; spirits depressed.

This disorder must be distinguished from lumbago and colic; but in lumbago the pain is on both sides, and does not shoot down to groin; neither are there nausea and vomiting, while in colic the urine is not disturbed.

Treatment.—Venesection, leeches, and fomentations to the back; no blisters.

Purgatives of castor-oil are best; lavements of warm water are often of great service.

Barley-water with gum arabic in it. Diluting liquids.

INFLAMMATION OF LIVER.

Much more frequent in warm climates than in cold. The signs are those of fever—pain and a feeling of tension on the right side, over the liver region; this pain may be dull or sharp, and pricking, according to the part of the liver which is affected, and it shoots, in some cases, up to the right shoulder and parts adjacent; but sometimes to the left shoulder, when the left lobe of the liver is affected. The movements during the breathing increase this pain, and the patient can not lie on the left side usually. With all these, nausea and vomiting may arise if the part of the liver near the stomach is inflamed. This pain in the

shoulder has frequently been mistaken for rheumatism. Jaundice may attend, but not always.

Treatment.—The object is to reduce the inflammation before it terminates in the formation of matter, which matter may become dangerous to life. Blood-letting and leeching, as in the foregoing diseases, only we need not bleed from the arm, after four or five days have elapsed.

Repeated blisters.

Purges of infusion and salts, as in No. 2.

Lavements are useful, and after the high inflammatory signs have decreased, the calomel and antimony powders (No. 32), low diet.

CHRONIC HEPATITIS, OR LIVER DISEASE.

This may follow an acute attack, or it may arise independently. The symptoms are rather obscure; there may be thirst, and other signs of feverishness, or none may be perceptible. The digestion becomes disturbed some three hours after a meal, the bowels usually confined, and the motions lumpy, and clay or ash-colored. There may be more or less of jaundice, and a feeling of tension or weight in the right hepatic region may attract attention. Pains may exist, but they are not usual. If an abscess have formed, or is forming in the liver, shiverings, or what are technically called rigors, give tokens.

This disease may prove fatal by inducing dropsy.

Treatment.—Leeching for local pain is sometimes required.

If the bowels are not in an irritable state, purgation is most efficacious.

No. 44. Blue pill.....	3 grs.
Compound extract of colocynth.....	2 grs.

Make a pill, to be taken every night for four or five nights, and next morning give the salts and senna mixture, so as to secure a tolerably free action of the bowels, so far as the patient can bear. Mercury has been forbidden in this complaint; but so long as the stools are light and clay-colored, the mercury is likely to do good.

Bitter tonics, such as taraxacum, gentian, etc., with soda. The dandelion or taraxacum is useful when light-colored stools proclaim a torpor of the liver, and when the stomach functions are not impaired.

No. 45. Bruised dandelion..... 4 oz.
 Distilled water..... $1\frac{1}{2}$ pints.
 Boil down to a pint and strain.

No. 46. Of this decoction..... 2 oz.
 Carbonate of soda..... 3ss.
 Compound tincture of gentian..... 1 dr.

Give three times a day

Either of the other bitter infusions, with soda, may be given in like manner.

One of the most efficacious remedies, both internally or externally, is the nitro-muriatic acid.

No. 47. Of Muriatic acid..... 1 dr.
 Nitric acid, diluted..... $\frac{1}{2}$ dr.
 Compound infusion of orange peel, or of
 gentian..... 6 oz.
 Mix.

Dose, two table-spoonfuls thrice daily.

The Nitro-muriatic acid lotion :

No. 48. Muriatic acid..... 3 oz.
 Nitric..... 2 oz.
 Water..... 5 oz.
 Mix.

Two table-spoonfuls of this to a quart of water may be applied warm, over the right side, several times a day. If a bath of this sort can be obtained, it would, probably, be very useful. (For treatment of bilious headache, and the ordinary bilious disorders, see first section, article, SECRETIONS.) Change of scene, and from a hot climate to a colder one, are necessary. Certain mineral waters may be resorted to. (See MINERAL WATERS.)

INFLAMMATION OF THE BLADDER—CYSTITIS.

Acute and chronic; symptoms, feverishness; the local or peculiar signs are sharp pain in the region of the bladder, increased upon pressure at the lower part of the belly; frequent making of water, with painful discharge of urine. There may be a bearing down, and also vomiting may attend.

Treatment.—Blood-letting or leeches, according to violence of symptoms of fever; warm fomentations, absolute rest, warm bath; Dover's powder, and potash or soda.

No. 49. Dover's powder.....	4 grs.
Bicarbonate of potash or of soda.....	20 grs.
Syrup.....	1 dr.
Water.....	1 oz.

Every fourth hour. The bowels are to be kept open by castor-oil, and by lavements of a soothing, emolient character. The chronic form is shown by pain or uneasiness on making water, and by mucus appearing in the urine. In the latter periods of this chronic form, we may be obliged to give copaiba capsules with soda draughts, as in No. 49, keeping the bowels open by castor-oil.

In both forms the urine should be rendered as unirritating as possible, by tumblerfuls frequently of barley or gum-water, etc.

INFLAMMATION OF THE URETHRA, OR URETHRITIS.

The male urethra is a somewhat tortuous canal, with very delicate irritable lining membrane; and when seized with inflammatory actions, much pain, and even agony, results. There is a pain deep-seated in the perinæum, and often sharp pain in passing the water, with spasm that temporarily arrests the flow. There may be a white mucus cloud in the urine, with scantiness of it, and after a while pus or matter is ejected. More or less of fever may be present.

This disease may arise from exposure to a draught of cold air of the part (the perinæum) in a sweating state, while the constitution is not in a healthy condition.

Treatment.—Leeches, according to severity of symptoms, must be applied to the perinæum, the bleeding encouraged by fomentations or poultices. Drink freely of diluents, barley-water, etc.; get the bowels open, and give these draughts:

No. 50. Bicarbonate of potash.....	℥j.
Syrup.....	℥j.
Water.....	1 oz.
Tincture of henbane.....	20 to 30 drops.

About three times a day. Low diet.

If a purulent discharge continue when all other signs have disappeared, balsam of copaiba capsules or cubebs may be tried. Much caution as to eatables and drinkables will be requisite, for, it may be, years afterward, to prevent suffering or a relapse.

RHEUMATISM

is inflammation of a peculiar or specific kind, and differs from common inflammation in never terminating in suppuration nor gangrene.

It may be acute or chronic, the acute forming an attack of what is called rheumatic fever.

RHEUMATIC FEVER.

This attacks the tendons and ligaments. It seems, at times, confined to certain joints; it is then called synovial rheumatism. The other species is called fibrous rheumatism. The attending fever is of the inflammatory character; tongue covered with thick white buffy coat; skin moist, and sometimes drenched with sour perspirations, so sour as to attract strong attention; pulse, full, round, and bounding; urine, high-colored, with, after a time, a rose-colored sediment. The chief sign is pain, which is very sharp, increased on every movement and affecting different parts, and shifting about, leaving a redness and swelling behind it. The synovial kind affects some joints, more frequently the knees; the patient lies on his back, utterly without motion, for every bending of the joint gives pain, even amounting to agony. Thirst, joints swollen, smooth, and of pale-red color.

Causes.—In acute rheumatism, the blood contains some irritating or poisonous ingredient, which falls upon particular parts of fibrous structure; cold and damp, obstructed perspiration, getting cold on issuing from heated rooms, etc.

Treatment.—Rheumatism is not in itself dangerous to life; but the valves of the heart, or other parts of the heart, or the pericardium (that is, the bag containing the heart) may become implicated, and then great danger to life immediately ensues. And even if life be saved, without the heart affection having been thoroughly subdued, the patient will have to live an invalid's life ever after.

When the heart is attacked during rheumatic fever, there will be sudden pain over the region of the heart; considerable difficulty of breathing, and increased impulse of the heart's beat; while, in some cases, the countenance becomes very anxious.

If the fever signs run high, blood-letting. In this disease it

is the great remedy, and should be pushed to as great an extent as the patient can bear; when the heart is involved, thirty or forty leeches should be applied over it. But few cases, however, will require this, though in almost all some leeches will be useful. The bowels should be opened gently, and then a night-pill given:

No. 51. Blue pill	4 gr.
Dover's powder, commonly called com-	
pound ipecacuanha powder.....	6 gr.

To be made into two or three pills, and taken every night for six or eight nights.

Then the following draught:

No. 52. Bicarbonate of potash.....	$\frac{1}{2}$ dr. or 30 gr.
Wine of seeds of meadow saffron, called colchicum.....	20 drops.
Syrup.....	1 dr.
Water.....	1 oz.

Every four hours, until the pain gives way, or until a feeling of nausea comes on, which would become vomiting; or, until the bowels become very loose; or, until drenching sweats (not the sour peculiar sweats of rheumatic fever) appear; then the colchicum must be immediately discontinued.

The writer has seen the greatest advantages derived from these draughts, nor has he ever seen any harm accrue from the use of the colchicum, so long as the above-stated precautions are observed. The potash in these draughts seems to help to arrest the sour sweats, and, during twenty years' use of them, he has never met with one instance of translation of disease to the heart during rheumatic fever.

If pain distress very much, fifteen or twenty drops of tincture of opium should be added to each draught.

The affection of the heart which supervenes, or is coincident, requires most vigorous treatment, as to blood-letting; and the system ought to be put under the influence of mercury as soon as possible, by the calomel and antimony powders, No. 32; but these are cases requiring professional attendance, if it can be procured.

The affected joints may be kept cool with Goulard water, or with Eau de Cologne lotion; and if pain remain after the heat and redness have subsided, gently rub, night and morning, this liniment over the affected parts; and it often gives great relief: •

No. 53. Soap liniment	8 oz.
Extract of belladonna	1 dr.
Cyanuret of potash.....	20 gr.

As the state of excitement passes away, give the bitter infusions, with nourishment, etc. (See FEVER.)

CHRONIC RHEUMATISM.

The forms of this are rheumatic headache, pain in the side, lumbago, or pain in the small of the back, and sciatica.

These pains are often sharp, and will come on in fits or paroxysms every day or alternate day, not unlike to ague, in this respect, of their periodical visitation. There are no marked constitutional symptoms. The headache pain may be situated in any part of the head, but it is more frequently met with on the top of the head. The pain is relieved somewhat by pressure.

In all these forms the draught No. 53, may be given, and the liniment No. 54, rubbed in; but, between the attacks of pain, sulphate of quinine should be given, one or two grains, in form of a pill, two or three times a day, during the intervals of freedom from pain. If fullness of the head or giddiness ensue, or a buzzing in the ear, the quinine must be discontinued. For the rheumatic headaches the hydriodate of potash has been found useful, about three to five grains in some tonic infusion. (See FEVER.) But any dryness of the mouth, or pain in the stomach, will tell us when this remedy is disagreeing, and when its use must be stopped.

In rheumatic stitch in the side, *points de côté* of the French, poultices, on which some powdered opium has been sprinkled, have often given relief; or the plaster of belladonna may be applied, or the liniment No. 54 rubbed in.

Wet and cold must be avoided; flannel, warm; and to wear as much silk covering as possible is advisable, to guard against the electrical changes in the atmosphere.

Several mineral waters are famed for alleviating rheumatic attacks.

GOUT.

An attack of gout is generally preceded by signs of stomach ailment; of indigestion; then, generally about one or two in the morning, a violent pain seizes on the great toe, or some other

joint. The violent pain continues a certain time—till next night—when, after sweating and sleep, the joint swells, becomes of a deep red color, the skin is distended, and there is swelling, more or less, in the parts circumjacent.

This round of symptoms will go on for several days, when the swelling and redness subside; the skin peels off, and the part is as it was before the attack; or, after many attacks, chalk-stones form in it.

When there is not sufficient energy in the system to allow of a regular fit of the gout, the disease may attack the head, when a state resembling apoplexy ensues, or else headache and other head symptoms arise. When the stomach suffers, there are pains in the gastric region, nausea, vomiting; when the heart, there will be palpitations, and tendency to fainting.

Causes are hereditary predisposition, fullness of body, middle age, a sedentary life and luxurious habits, acid wines, and errors in diet.

Treatment.—When time is of consequence, and speedy recovery sought, sharp and continued purgation is requisite; and the inor-bific element is thus got rid of. The best plan is to give an aperient pill, and draught next morning; then the draughts recommended in rheumatism, to which twenty grains of acetate of potash may be added.

To quiet the pains, some twenty drops of tincture of opium, at night, or ten grains of Dover's powder.

To the part, poultices, with powdered opium sprinkled on them; but cold applications may be dangerous.

When the stomach suffers, give stimulants—warm brandy and water, ether, ammonia and camphor, and the bicarbonate of potash. For prevention of attacks, diet during convalescence and the intervals, see DIET.

DYSENTERY, OR INFLAMMATION OF THE COLON.

Fever, with, at first, costiveness and flatulence; griping pains, then discharges of offensive, variously-colored motions, with severe bearing-down pain; masses of hardened, feculent matter are passed, of a globular form. These stools form the marking character; the pulse is quick and weak, and a sense of local heat, with hiccup and great prostration, follows.

Causes.—A peculiar contagion, fatigue, bad diet, intemperance, exposure to miasms.

Treatment.—If the fever is not attended with great debility and prostration, apply leeches and warm fomentations; or, better still, warm baths. Then the salts and senna draught.

Then Dover's powder ten grains, with two grains of the gray powder (mercury and chalk), three or four times a day, and encourage perspiration by warm drinks.

To relieve the bearing down, a lavement of two ounces of starch decoction, with thirty drops of tincture of opium; or, if the lower bowel is very sore, and will not bear the introduction of the clyster-pipe, then a grain of opium, mixed with a small bit of soap, may be introduced into the bowel. If the fever is of typhus character, ammonia in camphor-mixture, and stimulants.

To prevent relapses, flannel round the belly must be worn, and care taken to avoid the causes.

ERUPTIVE FEVERS.

ERYSIPELAS.

This is an inflammation of the skin, both contagious and infectious. The attack may occur in from two to fourteen days after exposure to the cause. It does not, like small-pox, secure from a second attack; and it may coexist with fever, and with other diseases. It may be mild or severe, or it may terminate in forming matter, or in gangrene. The fever has been divided into three stages; the first, inflammatory (see INFLAMMATORY FEVER); in about five or six days, the second commences, with brown fur on the tongue, when typhus symptoms appear; matter may form when the head is affected, and this kind of erysipelas is very dangerous; it may accompany wounds and external injuries.

Treatment must be modified according to the strength, and to the inflammatory symptoms. Aperients and salines, as in fever; but tonics, that is, quinine, may be given early; indeed, some begin with the bark. Looseness of bowels, and all exhausting discharges must be stopped; for looseness, see DIARRHEA; for sweats, the mixture No. 56, with wine. The quinine should be given in large doses, three or four or six grains, every four hours; when buzzing in the ears occur, discontinue the quinine, continuing the wine.

For local applications, warm fomentations, flannels wrung out of hot water, constantly renewed, so long as such applications are grateful and soothing to the patient. When no longer so, try cold—cold water cloths, renewed as they become hot; some recommend flour to be dredged over the parts, and it often proves very pleasant to the sufferer.

A minor degree of erysipelas sometimes is seen without fever, only more redness, with an itching of the skin, which is not swollen. This is called erythema; and it is often of importance not to meddle with it incautiously, as it is a sort of safety-valve in elderly persons, and in certain habits of body.

The writer recollects one case in point, where the gentleman, between sixty and seventy years of age, complained of an inflammation of the legs of this kind, and especially of the itching, which prevented sleep for hours. He wished to have the inflammation removed as soon as possible. The writer refused to undertake the case, unless he would undergo preliminary constitutional treatment by aperients, and a more rigid diet than the patient liked to submit to. The itching was removed, but local astringents were refused. The habit of body was plethoric. After the writer left the place, this poor but obstinate gentleman, notwithstanding he had been told of probable consequences, put himself under a French druggist, who soon removed the redness. In a short time afterward he was seized with apoplexy, which proved fatal, almost before the medical man, who had been summoned from a distance, could arrive.

Thus, similar inflammations may appear slight, but they may be so connected with the constitution as to be clearing it of some internal irritation, and preventing an attack dangerous to life.

To such cases constitutional treatment is alone safe, and only the mildest local applications should be resorted to; putting the secretions in order by aperients, and regulating the diet, insisting upon air and exercise, and the avoidance of sedentary habits.

SMALL POX

may be distinct, where the pocks are distinct from each other; or confluent, where they run together.

To pains in back and loins, the usual fever symptoms succeed;

and in three days, small red points appear on the face and head, the tongue is usually heavily loaded with a thick yellow or brownish coat, and much headache is present. By the fifth day (the second after the eruption) a little vesicle, with some colorless fluid in it, appears on each point, and an inflamed margin extends around. On the sixth day the fever lessens, and a viscid saliva in the mouth is troublesome; and, on inspection, the throat is swelled, with, perhaps, spots of eruption; swallowing is painful, the face and head swell, sometimes to a great size. About the eleventh day the spots are of full size, about that of a pea, usually; the swelling of face subsides, and the hands and feet swell; a crust forms on each pustule; feverish symptoms again appear, forming the secondary fever. The crusts dry and fall off, leaving spots of brownish color; these last either disappear in time, or indentations are left on the skin. On the first and second day the eruption is like solid red spots, papular, as it is called; on the third, fourth, and fifth, there is some light-colored fluid in each pock; the sixth and seventh, the fluid changes; on the eighth day it is yellow (pus); ninth, tenth, eleventh, twelfth, and thirteenth, each pock goes through various stages, until they burst, and scabs are formed.

The confluent sort is very dangerous—the fever being typhus, with prostration of the powers; coma, and delirium. The spots run together, are not circular, and the skin between them is of a dusky red. The first fever never remits, and symptoms of putrescency soon appear. Inflammation of the eyes is an occasional accompaniment; and diarrhea, or bleeding at the nose, is not unusual in either of the forms.

Causes.—Special contagion or inoculation. The attack of this disease takes place in from ten to sixteen days after exposure to the cause.

Treatment.—When the fever is violent, we must try to moderate it; the strength must be supported, and violent symptoms or inflammation combated. The aperient pills and Epsom salts mixture should first be given, and saline draught, with low diet, and a free ventilation of the apartment, are necessary afterward; but, as soon as the strength fails, or the pocks become flattened, some ammonia mixture with nourishment—beef tea, mutton-broth, etc., and wine, or brandy and water.

No. 54. Carbonate of ammonia.....	40 gr.
Camphor mixture.....	6½ oz.
Syrup	½ oz.
Liquor of acetate of ammonia.....	3j.

An eighth part every four hours.

If the bowels are purged, see DIARRHEA. If sweats exhaust—

No. 55. Dilute sulphuric acid.....	1 drachm.
Syrup.....	½ oz.
Infusion of calumba.....	½ oz.

A sixth part every four hours.

Light and air give vigor to arterial action. Hence, in parts exposed to the air, the pock-marks are deepest, as in the face, neck, etc.; and most deformity ensues where it is most annoying. To prevent these marks, the writer has derived great benefit from sprinkling over the face, or over each pock in the face and neck, some prepared calamine, (impure oxide or carbonate of zinc,) in fine powder; he thinks the usually-dreaded secondary fever has thus been rendered milder and less fatal. This should be done on the fifth day; and several persons have been thus saved from deep and disfiguring marks.

In convalescence, the gentle tonic infusion and nourishing diet.

COW POX. (See DISEASES OF CHILDREN.)

Cox Pow, or Inoculation, will be mentioned in the section devoted to Diseases of Children.

SCARLATINA, OR SCARLET FEVER.

The danger from this disease varies; and sometimes it is so mild that little or nothing need be done as to remedies; nature alone will be all-sufficient. But there are cases than which none are more deadly, not even the plague itself.

After the usual symptoms denoting the approach of fever—viz., chills of surface, nausea, pains in head and back, thirst, heat, restlessness, and frequent pulse—set in, the first stage, that is, from the commencement of the eruption, varies in duration from twenty-four to seventy-two hours; the second stage, or that extending from appearance of eruption to its subsidence, from six to eight days; and the third, or that from appearance of the eruption till its disappearance, from a few hours to two or three

weeks. So the whole course may extend from eight to thirty days.

The poison of this disease acts either on the skin, or the mucous membrane of the mouth and throat; and it may be limited to one or the other, or it may attack both. The poison of measles acts on the mucous membrane, lining the air-tubes below Adam's-apple, or the projection in the throat; while that of scarlatina affects the mouth and upper gullet above that point. Measles are of inflammatory character, scarlatina of typhoid. This disease is divided into a mild form, a severe form, and a putrid form.

When the fever symptoms have lasted about two days, a great many red points, separated by portions of skin of the natural color, first appear over the face and neck; whence it extends over the body. The interstices between the points become red from their coalescing.

In a couple of days, the eruption separates into patches, the skin is perceptibly rough to the touch, and scurf forms on the skin. Sometimes the scurf-skin has peeled off from the hands, preserving the shape of the fingers like a glove; and one author (Dr. Frank) alludes to having seen the warts on the fingers thrown off in the scurf. The rash begins to decline on the fifth day, and wholly disappears by the eighth. On looking into the mouth and throat, we shall see a bright red color extending over the whole of the surface which is visible. The tongue is remarkable, for through its white fur may be seen some protruding red points (the papillæ, which are unusually long); but, in some cases, the tongue is red all over its extent.

Some simple and very mild cases may consist of mere redness of the skin, without any affection of the throat; but, usually, the tonsils and glands under the tongue and lower jaw are swollen, and the act of swallowing causes pain, extending to the ear. The inflammation has sometimes crept up the passage to the ear from the upper and back part of the mouth, causing deafness.

In the malignant form, the mouth and tonsils are less swollen than in the preceding kinds, but the color is deeper, the redness being of a more intense red or livid color. In the former degree, little specks of white lymph may have been deposited on the throat and tonsils; which specks or spots, if washed or wiped away, will leave the red skin underneath, in the milder species; but in the severe and malignant form, there is ulceration beneath

them; that is. ulcers, more or less deep, are formed in twenty-four or thirty hours, by the sloughing away of the mucous membrane. Fluids are rejected through the nostrils. The tongue, from the first, is covered with a brownish fur, more or less dark colored. The initiatory symptoms are those of typhus fever; vomiting and diarrhea are frequent; headache, pain in the back, oppression at the pit of the stomach; eyes heavy and muddy; pulse small and fluttering, great nervous depression; the breath is fetid, and ash-colored spots are visible over the interior of the mouth and throat. Ulceration and gangrene follow; the voice becomes hoarse, and the breathing is attended with a noise as of one strangling; fierce delirium, with hiccup, bloody stools, etc., close the scene of the awful malady.

Danger may arise from the poison of scarlatina causing dropsy, which dropsy supervenes rather on the milder than on the severe forms of this disease. It begins with edema, or swelling of the face, which affects other parts of the body. The urine is scanty at first, but soon becomes copious; the pulse is quick, and no more serious form of dropsy may show itself; but the serum may be effused into the head, when headache, convulsions, etc., give evidence of the danger. It may be effused into the chest, when difficulty of breathing will become manifest; or the poison may attack the kidneys, giving rise to renal or kidney dropsy. Wherever the poison has been freely eliminated by the skin, dropsy is seldom if ever seen; therefore, it does not follow cases of great severity, or those accompanied with much eruption. Dropsy appears between the sixteenth and twenty-fifth day; and if no dropsy appeared by the end of the fourth week, Dr. Wells considered all danger of its occurring had passed over. It usually appears about the twenty-first day from the commencement of the fever. Dropsy may attack the cellular membrane of the body and limbs, without affecting any of the interior organs. One attack secures the sufferer from a second one.

Causes.—Specific contagion. The latent period is from two to ten days after exposure to the cause.

Treatment.—In the mild form, a temperature of about 60° of Fahrenheit's scale should be kept up. Pure air, no animal food, gentle aperients, diluting drinks. The attack soon passes off.

But in proportion as the fever assumes the typhus form, and

the throat symptoms put on the character above described, we must support the strength, and enable the patient to survive the prostration caused by the scarlatinal poison; wherefore, the quinine mixture, with acid No. 21, must be given assiduously; and wine, also, at regular intervals, with sago. But since children can hardly be made to take the bitter quinine, we must rely chiefly on wine.

An observant person can easily see whether these remedies are doing good by their effects, or whether they are given in too large quantities. The treatment recommended in typhus will be proper here.

Sometimes the eruption fades suddenly, and distressing oppression and inward symptoms follow, with death, if not relieved by a return of the eruption. Dr. A. T. Thompson recovered some cases of this kind, by immersing the patients in a bath, with flour of mustard thrown into it. The skin, in one case, became red as a lobster; but all inward suffering and danger to life ceased forthwith.

Some medical men strongly recommend the carbonate of ammonia, 5 grains in decoction of bark, 1 or 1½ oz., every three or four hours. Others give chlorine, in the form of chlorate of potash.

No. 56. Chlorate of potash.....	3 to 5 grains.
Muriatic or hydrochloric acid....	10 to 12 drops.
Infusion of bark.....	1 oz.

Or else, if the bark is too disagreeable,

No. 57. Syrup of orange-peel.....	1 or 1½ dr.
Water, or barley-water.....	1 or 2 oz.

instead of the infusion of bark, every three or four hours.

As to local applications to the throat, the writer has painted, by means of a camel-hair brush, over the whole surface of throat and tonsils, every night and morning, with this solution of iodine.

No. 58. Spirits of wine.....	2 oz.
Purified iodine.....	40 grs.

This should be continued to be applied, even when gangrene and deep ulcerations exist; but if the unprofessional reader can not do this, though it is not difficult to do, the following gargle should be often used; or, if the gargle can not be used, the parts should be washed with it, for it is of importance to keep the

surface of the throat as clean and as clear from putrescent matter as possible. Such matter reacts upon and depresses the constitution.

Scarlatina, or anti-putrescent Gargle.

No. 59. Hydrochloric acid.....	1 dr.
Honey, or honey of roses.....	1 oz.
Tincture of myrrh.....	$\frac{1}{2}$ oz.
Barley-water.....	7 oz.
Mix for a gargle.	

But as depression and exhaustion prevail, press the wine or brandy and water, with animal jelly or beef tea, between the hours of taking the stimulus. The patient must be supported against the sedative effect of the poison, and it may encourage the timid and despairing if the author mention one of his cases in a lad of fifteen, where the throat was in such a state that milk and wine had to be poured into the gullet by the quill of a pen. Life was thus supported for ten days, and recovery ensued.

As to preventing an attack of scarlatina, in those who are exposed to danger, and have never previously suffered, he has never seen any evidence of good from administering, with this view, the belladonna, as recommended by Dr. Hahnemann; but if any one should wish to try it—and it may do some good by giving confidence—Dr. Hahnemann's preventive is this:

No. 60. Extract of belladonna.....	3 grs.
Distilled water.....	1 oz.

Of this, give three drops, twice a day, to a child under twelve months, and add one drop more for every year of the age beyond that of the first year. He says, if taken five days before the infection, if it do not prevent, it will render the attack milder.

Now, if we are asked, when does the danger cease of giving or catching this disease? we must say, we do not know; but so long as the scarfskin is being cast off in the shape of scales, etc., there is danger of infection.

Of course, all offensive excretions must be removed constantly from the bed-room; and cloths, wetted with chloride of soda or lime solution, should be hanging about the room.

The clothes of the patient, of the bed, and even the walls themselves, retain and obstinately hold the power of infection for months after the case has terminated, and white or limewashing, fumigations, or even shutting up the room, and burning sulphur,

have not eradicated all danger. Still these precautions must be taken. As to clothes, the author has found that exposing them to a great degree of heat has seemed to prevent infection. They should be put into an oven, and exposed to a heat of 220° Fahrenheit for some hours. There is some reason to think that the heat decomposes the lurking poison—volatilizes it, it may be said. This precaution, then, should never be neglected. Dr. Henry, of Manchester, England, recommended this in 1832, and it has been found effectual in Egypt. Bales of goods have been thus disinfected. The air in the interstices of such bales retains the poison usually.

For the treatment of dropsy, see DROPSY.

PLAGUE, OR PESTIS.

This is a malignant or putrid typhus fever, with certain glandular swellings in the arm or groins called buboes, carbuncles, or pustules, of a white, livid, or black color.

The stages vary; there are no premonitory signs, and so intensely deadly is the poison in some cases, that life is very soon extinguished.

The symptoms of a severe attack are those of the worst kind of typhus, but the fever is more intense in plague. The gait staggering, and the eruption of buboes, etc., mark the nature of the disease.

The symptoms need not be detailed to those who have read the signs of typhus, only the anxiety and nervous dread are greater, while utter prostration attends throughout, almost from the beginning.

An occasional darting pain in the region of the gland precedes the formation of a plague bubo, when, some hours after, a deeply-seated, hard, round tumor, moveable and painful on pressure, shows itself; the skin does not inflame until the bubo has continued eight or nine days, when it becomes discolored. On the fourteenth or twenty-second day, if life be spared so long, matter forms, which is at length discharged.

The carbuncle appears first as a vesicular eruption, roundish and jutting forward. The superjacent skin is uneven, wrinkled, grayish, and under it there is a dusky yellow, or even blackish fluid. When this has been discharged, there is a dark gangrenous

surface underneath. If common matter form, after a time, the part heals slowly; if not, gangrene spreads.

Livid, or pale purplish spots, like flea-bites, appear, and large streaks or blotches, like dark bruises, occur in some cases.

Those cases in which buboes arise early are favorable; and also when the swelling is firm and unyielding to the touch, not generally adherent, and is easily moveable at its base.

The slighter the fever the better; the absence of vomiting is favorable, and the patient living on to the eighth day.

Causes.—Epidemic influence; contagion. The plague may lie latent or concealed for thirty days, it is said; but the latest report of the Paris Academy of Medicine gives eight days as the maximum of incubation; so that if a person sustain no attack after being exposed to danger for eight days, he may be considered to have escaped. Goods, woollens, cotton, etc., will convey the poison from place to place.

Treatment.—Usually there is little to be done in the way of treatment; for every thing is instantly rejected by the stomach.

Still small pieces of ice may be swallowed, and calomel with camphor may be tried, as in No. 32, only in smaller quantities.

Cold applications to the head are useful. A poultice, with powdered opium sprinkled over it, to the pit of the stomach, or opiate liniment.

No. 61. Of soap liniment.....	6 oz.
Tincture of opium.....	2 oz.
Mix.	

Rub gently into the pit of the stomach night and morning, about a table-spoonful of this liniment.

The buboes, or carbuncles, should be encouraged to suppurate; that is, to form matter by poultices frequently renewed; and if gangrene, or much fetid smell, is perceptible, the charcoal or chlorine poultice.

Brandy and water, or wine and brandy, should be got down, by tea-spoonfuls even, so as not to excite vomiting.

Acid drinks at pleasure. As soon as nourishment can be borne, give jelly, beef tea, etc.

To disinfect goods, follow Dr. Henry's recommendation of putting them into a heat of 220° Fahrenheit. He thinks the air charged with the plague poison remains stagnant in the interstices of the goods, and that heat can alone disinfect them.

MEASLES, OR RUBEOLA. (See DISEASES OF CHILDREN.)

VESICULAR ERUPTION, OR PEMPHIGUS

This disorder is characterized by eruptions dispersed over different parts of the body, which eruptions assume the form of vesicles, about the size of a split pea, increasing to that of a large nut, and contain a yellow fluid. The fluid soon becomes pinkish in color, and turbid; then the vesicle, or bladder, bursts, or else it dries up into a dark-colored crust. If it burst, the skin underneath it is in a sort of irritable or excoriated state. Successive crops appear and disappear in three or four days, causing much exhausting irritation in children.

These vesicles sometimes attack the interior of the body, causing symptoms of irritation corresponding to the part affected. There is an acute form, attended with fever, and a chronic form. It seldom attacks adults, but it may prove dangerous to weak children, and when the bowels are affected. It may be contagious.

Treatment.—Observe the kind of fever which co-exists, and act accordingly. Tonics are usually required early. If the bowels suffer, see APHTHA, or THRUSH IN CHILDREN. Puncture the vesicles. Apply spermaceti ointment to the ulcers.

NETTLE RASH—URTICARIA.

Slight fever, with an eruption, as if the person had been irritated by nettles, with great itching. It may continue an indefinite time, and may appear or disappear at intervals; usually recedes in the day-time, reappearing in the evening.

Causes.—Suppressed perspiration, irritating diet.

Treatment.—By a cool regimen, mild aperients, tonics.

SHINGLES, OR ZONA.

The eruption occurs about the waist, extending half round the body; small distinct vesicles; skin of purplish red hue; great itching and heat, with fever. Rarely met with except in the young. It has been known to terminate fatally. The vesicles dry and scale off. After some weeks, the eruption and symptoms give way and vanish.

Treatment.—Keep the patient moderately warm; give tepid diluents, gentle aperients.

No. 62. James's powder.....	3 grs.
Dover's powder.....	5 grs.

Every night, and again once or twice in the day.

If the itching is very troublesome sprinkle starch powder over the breaking or broken vesicles. Use tonics.

If there is much pain, thirty grains of watery extract of opium to one ounce simple cerate will relieve. If we apply a strip of blistering plaster near to where the vesicles are likely to appear, the extension of the disease will be checked, the vesicles will shrivel, and the progress of the disease be cut short. The blister must not be applied over the vesicles but near to them only, or gangrene might follow.

MILIARY FEVER. (See DISEASES OF WOMEN.)

HEMORRHAGES, OR BLOOD FROM VARIOUS PARTS.

BLEEDING AT THE NOSE—EPISTAPIS.

After a sense of weight in the head, flushed face, giddiness, buzzing in the ears, blood is discharged from the nostrils in varying quantities.

Treatment.—As this hemorrhage may be giving relief to an overloaded state of the blood-vessels in the head, we should ascertain if symptoms of fullness of head have existed; but in all cases purgatives are useful.

Powdered charcoal may be snuffed up the nostrils, or plugs of lint rolled in this powder may be put up, or plugs wetted with this lotion:

No. 63. Sulphate of zinc.....	1 dr.
Sugar of lead.....	10 grs.
Distilled water.....	10 oz.

Or alum-water, used in like manner, two drachms to a half a pint of water.

When faintness impends, we should try to arrest the bleeding directly. Absolute rest and quietness, with the head erect; cold cloths or ice to nape of neck, or behind the scrotum; a cold key to nape of neck will sometimes arrest; plugs once introduced

must not be hastily taken away; diet according to the state of the strength.

SPITTING OR COUGHING UP OF BLOOD. (See CONSUMPTION.)

VOMITING OF BLOOD—HEMATEMESIS.

This is usually preceded by a sense of weight, oppression, and anxiety, at the pit of the stomach. There is usually no cough. The blood is discharged in some quantity; it is of a dark color, and is often mixed with sundry contents of the stomach. Blood also passes from the bowels, and the stools are blackish or dark-colored, the blood having been acted upon by the acid it meets with in its passage through the bowels. Clots, or coagula, are observed in the fluid ejected, and it thus differs from the black vomit of certain fevers in hot climates. Discharges of blood may occur in severe scarlet fever, or sore throat, and other disorders, attended by great prostration of strength.

Causes.—Suppression of discharge from piles, or other suppressed discharges; certain poisons or irritating matters in the stomach; ulcers in it; organic disease of stomach, when the blood is of brown color, and mixed, as above described, with other matter. Danger does not so much arise from the quantity of blood ejected at once, as from repeated attacks.

Treatment.—If there is too great a fullness of the system, some blood may be taken from the arm. Follow by low diet. Iced water or ice; keep the bowels open by gentle aperients; ice to the pit of the stomach.

No. 64. Dilute sulphuric acid.....	15 drops.
Water	1 oz.
Tincture of opium.....	10 drops.
Syrup.....	1 drachm.

Every four hours.

Or the acetate of lead and opium. (See SPITTING OF BLOOD.) Some strongly recommend oil of turpentine, ten to thirty drops, mixed in an ounce of water, with one drachm of mucilage of gum arabic. If organic disease is acting as a cause, we must act accordingly.

IMMODERATE FLOW OF THE MENSES. (See DISEASES
OF WOMEN.)

PILES—HEMORRHOIS.

Piles may protrude externally, or they may exist within the bowel. There is a sense of weight in the back and loins, flatulency, giddiness of head, sickness on going to stool, a sharp pain is felt at the time, and continues, if the piles do not burst; when they do, relief is experienced.

When they bleed, they are called bleeding piles; when they do not, they are called blind piles.

The bladder is sometimes affected, and there is a desire to pass water frequently.

They may induce inflammation in the part, or matter may form; and when much blood is passed, or there is a frequent discharge of blood, much debility results.

Causes.—Costiveness, hard motions, hard riding, pregnancy, a pressure of tumors; suppression of any habitual discharge; a full state of the veins in the belly or liver; intemperance; or piles may act as a safety-valve to prevent apoplexy, from too full vessels in the head.

Treatment.—If the piles are salutary in reducing the fullness so often observed in stout elderly people, who are fond of eating and drinking, we must be cautious how we arrest the bleeding. We must first reduce the fullness of habit by mild purges, reduced diet, etc.; but if the bleeding is causing debility, we must arrest the flow as soon as we can.

One principal rule is to get the bowels into such a state as that the motions should be always soft; active aperients are to be avoided, for they will cause a bearing down.

Sulphur is one of the best aperients in cases of piles.

No. 65. Washed sulphur.....	1 oz.
Lenitive electuary, that is, confection of senna	2 oz.
Powdered jalap.....	$\frac{1}{4}$ oz.
Syrup enough to form an electuary.	

Take of this a bit of the bulk of a walnut, whenever the motions are becoming hard.

When the liver is suspected not to be acting properly, give twenty-five drops of tincture of colchicum seeds, with twenty drops of liquor of potash, in some barley-water night and morning, till the motions become soft.

Locally, astringents may be applied.

Ointment for Piles.

No. 66.	Sugar of lead.....	1 dr.
	Powdered opium.....	$\frac{1}{2}$ dr.
	Spermaceti ointment.....	1 oz.
	Mix.	

Apply some of this night and morning.

If the outward piles are hot and irritable, a cooling or evaporating lotion; or a few leeches near to, but not on, the part. Pressure within the bowels, by some India-rubber articles made for the purpose. Linen or lint wetted with sulphate of zinc, one drachm in water, eight ounces, may be applied. Some recommend the balsam of copaiba for the painful piles, thirty to forty drops, night and morning. Others give cubebs, twenty grains, twice a day. Ward's Paste is often useful.

Ward's Paste.

No. 67.	Elecampane root, powdered;	} each 1 lb.
	Black pepper;	
	Fennel seed, powdered;	
	Clarified honey;	
	White sugar,	

Mix the first three, melt the last two into a syrup, and mix all together.

The bulk of a nutmeg to be taken twice or thrice daily.

A rectum bougie, or a common candle, may be introduced.

Diet, very unirritating.

BLOOD FROM THE KIDNEYS AND BLADDER—HEMATURIA.

An evacuation of urine, mixed with blood, preceded by a sense of weight or pain in the loins. There is a deposit of coagulated blood at the bottom of the vessel.

We must take care that the blood comes from the bladder, and not from piles.

When blood comes from the kidney it is generally equally diffused through the urine, and small cylindrical portions of fibrine, resembling worms, come away. Blood from the bladder comes away after the urine has been discharged, the urine having flowed off nearly pure, and the sense of heat and pain are at the bottom of the belly.

The blood may come not from the bladder but from the urethra (the passage from the bladder); it then comes by drops, or in

a stream, unmixed with urine; neither is it accompanied nor preceded with a desire to make water.

If we want to make sure that the deposit is blood, boil the urine, and it will furnish a brown coagulum; the fluid part regains its natural urine color. The blood may meet with acid in the urine, when it becomes blackish. In indigestion, the urine often deposits a sediment; but this, by heating, is redissolved, which blood would not be.

The urine, in jaundice, looks as if blood were in it; but cloths dipped in it are dyed yellow. The system may sympathize more or less.

Causes.—Hard riding; a stone in the parts; malignant disease in the bladder is attended with a deposit in the urine, resembling blood; but it is not blood, and is of a peculiar color.

Certain substances, when eaten, will redden urine; the prickly pear or Indian fig, beet-root, madder.

Treatment.—Gentle aperients. The most direct astringent is probably the gallic acid.

No. 68. Gallic acid.....	5 gr. to 8 gr.
Mucilage of gum arabic.....	1 dr.
Tincture of henbane.....	20 drops.
Water.....	1 oz.

every three or four hours. This a powerful remedy.

Or the acetate of lead and opium. (See SPITTING OF BLOOD.)
Or this:

No. 69. Bruised whortleberry leaves.....	$\frac{1}{2}$ oz.
Boiling water.....	1 pint.

Let it stand for two or three hours; when cold, strain.

No. 70. Of this infusion.....	1 oz.
Tincture of kino.....	$\frac{1}{2}$ oz.
Syrup.....	$\frac{1}{2}$ oz.

To be taken in the day. Or this:

No. 71. Tincture of muriated iron.....	10 drops.
Spirits of nutmeg.....	1 dr.
Water.....	1 oz.

Three times a day.

A cold hip bath; or, ice up the lower bowel. Drinks of barley-water, gum-water, etc. If any gravel is passed at the same time, give alkalies, for which see GRAVEL.

APOPLEXY.

There are forms of head disease which sometimes exist independently, or as symptoms of apoplexy. They are:

Lethargy—which is a disposition to sleep, from which the person can be roused, will answer questions, and seems at other times as much awake as usual.

Coma is a greater degree of sleepiness than we observe in *lethargy*. The person can be roused for a moment, but he speedily relapses into his state of sleepiness.

Carus is deeper drowsiness than *coma*, and the person can not be roused at all.

Apoplexy has been divided into the sanguineous and serous, the former occurring with signs of fullness of the vessels, the latter in old people.

The *sanguineous* kind attacks suddenly; the powers of sense and motion are abolished; the countenance is flushed; the temples throbbing; the pupil of the eyes dilated, sometimes contracted (in the most fatal cases); foaming at the mouth, and a motion as if the mouth were smoking a pipe; the respiration is snoring, what is called stertorous; grinding of the teeth, in some cases; the stools are passed involuntarily.

This kind of apoplexy may be preceded by various head symptoms, as giddiness, dimness of sight, drowsiness, loss of memory, or stuttering, or hesitation and loss of speech.

After the apoplexy has continued some time, the pulse becomes languid and the breathing more and more impeded, until it is stopped altogether.

The attack of what is called by some *Serous Apoplexy* is usually more gradual. A pale and humid face; a small, weak pulse, which may be regular or intermitting; giddiness; heaviness; impeded speech, or loss of memory may precede.

After a time the patient lies prostrate and unconscious, with pallid face, and coldness of skin and feet.

Both the sanguineous and serous kind depend upon one similar state, and they only differ in the symptoms just described.

After the patient has continued in this state some time, paralytic symptoms supervene; and if recovery or amendment do not ensue by the third day, a fatal result may be apprehended.

Causes.—A certain age predisposes; and all who have passed

their forty-fifth or fiftieth year should cautiously avoid the causes. A state of fullness of vessels; that is, of the arteries in the head, or of veins in the belly; a short neck and large head; a luxurious life; over-eating and drinking, with sedentary habits; great study; suppression of any habitual discharge, or of any cutaneous eruption; certain cases of heart disease; all these predispose. The exciting causes are: Violent mental emotions; sudden cold; violent exercise in those predisposed; certain postures in which there is straining in the head vessels; tightness of ligatures round the neck; all excesses; derangement of stomach; certain poisons, and fumes of certain substances.

Treatment.—In the plethoric, or sanguineous kind, we must bleed largely, and perhaps repeatedly, for the vessels must be unloaded. So long as the pulse keeps up with considerable power we may bleed.

Leeches or cupping-glasses should be applied.

Sharp purges, as croton-oil, one or two drops put on the tongue; or this:

No. 72. Epsom salts.....	1 oz.
Powdered jalap.....	$\frac{1}{4}$ oz.
Infusion of senna.....	4 oz.

Half to be given directly, and the other in four hours, if the former have not operated; but as the power of swallowing is frequently lost in these cases, we must rely on the croton oil, put on the tongue as above directed.

When the bowels have been freely opened, and as much blood taken away from the arm as the patient will bear, we should give calomel and antimony powders. (See No. 32, in PHRENITIS.) If there be much vomiting, the antimony must be omitted, and the calomel alone given.

See that the bladder is emptied every day.

When the apoplectic signs still continue, leeching and cupping may be repeated—so long as the skin retains its heat, and the pulse some strength—but when, after some time has elapsed, little or no amendment ensues, even although the calomel have caused a swelling and tenderness of the gums, little hope remains of recovery from active treatment.

The calomel should not be omitted, because if any remedy will repair the damages caused by the apoplexy, or remove a con-

gestive state, the mercury is most likely to do so; and if the calomel powders can not be given, the writer would order one drachm of liniment of mercury, to be rubbed every night and morning into the interior surface of the thighs, or the back of the neck, until the gums are tender. In most cases the calomel powders can be administered, by putting on the tongue three grains of it, with or without the antimony, as it may be, and without any gum arabic powder, in order to lessen the bulk, and they will slowly pass down into the stomach.

Emetics have been recommended, when the attack takes place soon after a full meal; but they should never be given in this kind of apoplexy—the plethoric or sanguineous. We should remove the contents of the stomach by the croton oil, or some other active purgative. The emetic has seemed, in more than one case, to have increased the oppression of the brain in a marked manner.

Purgative lavements may be administered.

For local applications, cold to the head, pounded ice, etc. The diet should consist of light drinks, and no nourishment at all.

As to the serous variety of apoplexy, the treatment does not require to be so energetic as in the sanguineous; still, we must lose no time.

Blood-letting will seldom be necessary; and if there be cool, or cold skin, with pallid face and small pulse, blood-letting might do harm. Then leeches to the head or temples, and repeated cupping to the back of the neck.

Purgatives are here extremely useful.

In this form, too, blisters to nape of neck; mustard poultices to the feet; warm baths to the feet, with flour of mustard in them, while cold is applied to the forehead and head.

Here, again, as a congestive state of the brain exists, the calomel ought to be given, until the gums become tender.

If symptoms of sinking appear, the author has never seen advantage derived from ammonia, ether, camphor, and wine; for the case does not consist of mere prostration or debility, as in some of the preceding diseases; but there is a congestion, probably with an effusion of serum on the brain, which is not likely to be removed by stimulants. They must, however, be tried.

When the acute signs cease, and the state of palsy is left, we must treat as for palsy.

In no case, probably, is the adage of prevention being better than cure, more applicable than in the case of apoplexy; and it is no exaggeration to say, that very much may be done, not only to prevent an attack of apoplexy, but even to remove, in a great measure, the apoplectic tendency.

The first point to be attended to in this preventive system is the diet, both as to the quantity and quality; the next, the mind, as to mental emotion and excitement. The quantity must be adapted to the powers and state of circulation of the individual. In those of a weak habit, with cold skin and poor, weak pulse, the diet may be plainly nutritious; but even in these habits, where there is a tendency to what is called blood to the head, stimulants should be cautiously tried, and perhaps had better be abstained from altogether. The breakfast should consist of tea, with bread and butter, and, in the weak habit, an egg may be added, if it agree with the person. The dinner should be at an early hour—twelve or not later than two o'clock—and may consist of a *moderate* portion of well-dressed mutton, with well-boiled potatoes or other vegetable. At tea-time, mere diluents; and at bed-time, no supper of any thing but gruel and milk, or barley-water and a biscuit.

Coffee has been prohibited by Dr. Eberle, in his practice of physic, as being “decidedly injurious when there is an apoplectic tendency;” and he mentions a case of apoplexy in a gentleman “who was in the habit of taking large quantities of very strong coffee twice daily.” Dr. Eberle advised him to leave it off, and apoplexy “never recurred, and even the ordinary premonitory symptoms left him.” To tea, Dr. Eberle has no objection; but I must remark that the gentleman mentioned took coffee immoderately, and very possibly he was exposed to much mental excitement and anxiety, perhaps from speculations in business, etc., which excitement would be more likely than coffee to excite disease. At all events, the writer has never seen any harm arise from coffee moderately drank. Theine and caffeine are identical as to components, says the chemist; and if any apoplectic person were very partial to coffee, the author would not be deterred from allowing it to be taken in moderate quantities, but not made too strong.

Tea is perhaps preferable, and green tea has been much praised as a preventive. In the person of plethoric habit, who

has been threatened with, or has suffered an attack of apoplexy, the diet must be so reduced in stimulant, and even nutritious material, as to demand the sternest resolve in the patient to persevere. Few people, even in these days of so-called civilization, have energy and strength of mind enough to follow up such a system of diet as would be best fitted to prevent attacks of this disease. Such persons it is in vain to tell that every full meal is full of danger to life; that it is like the sword of Damocles, ever ready to fall. The gratification of the palate, and the enjoyment of its pleasures, overpower, overwhelm all other considerations; and their answer to all well-meant advice and remonstrances has been, that though they might add some ten or more years to their lives, by following implicitly directions here laid down, yet such a state of mortification and self-denial would to them render existence a burden; it would not be enjoying life, for it might be considered no better than a state of vegetation. If any of our readers have elderly relatives so situate, and thus obstinate, the writer would advise, as the next best mode of acting under such a suicidal system, that they should induce the threatened persons to take frequently sharp purgatives. In this way the blood-vessels do not fill so quickly as they would otherwise, nor does the blood become so rich in inflammatory elements—if the word rich may be allowed.

The tincture of colchicum-seeds is useful as a preventive. Forty drops in water every night, until they can no longer be borne, I have given with advantage.

The tepid, or cold shower bath, every morning, or whenever the giddiness, throbbing, or head symptoms show themselves, must be employed; but always the person must, before the shower fall, sit or stand with the feet in as hot water as can be borne comfortably. This is important. All tight ligatures around the neck to be avoided; also acts of stooping, as in tying shoes, picking up any thing from the ground, etc.; also straining at water-closet.

Violent exertions or exercise may bring on an attack; abuse of any pleasure. Excess in venery is peculiarly fatal in some; and many a person has thus been sent to answer all his doings and sayings in this world when he was least prepared. Intemperance is highly prejudicial.

Where any discharges have been suppressed, or eruptions, or

bleeding from piles have been suddenly stopped, blisters and mustard cataplasms, or stimulating liniments, may be applied; and in the case of piles, leeches to the perineum must be from time to time resorted to.

See a case, under the head of ERYTHEMA, showing how the injudicious suppression of a rather slight inflammation gave rise to apoplexy and death.

Where gout has seized on a joint, and is suddenly translated to the brain, we generally find that there is a coexistent, or that there has been a preceding state allied to debility; then purgatives and stimulants will be required, according to the patient's peculiar condition at the time.

PALSY, OR PARALYSIS,

is a diminution or total loss of the powers of motion, and sensibility in certain parts of the body.

It may involve a loss of power over one side of the body from the head downward, and is then called hemiplegia; or it may affect one-half of the body, taken transversely, and is then called paraplegia.

Besides these, there are partial palsies, certain muscles being alone affected. This kind may arise from poisons, as from the fumes or absorption of lead, in painters and glaziers.

Hemiplegia sometimes follows an attack of apoplexy; at others, it occurs independently.

Symptoms.—Voluntary motion or sensation, or both, are abolished in certain parts of the body; sleep, and slow, soft pulse; torpor, giddiness, pain in the head, loss of memory; sense of numbness, of creeping or pricking in the affected parts. The eye and mouth may be drawn on one side; the judgment is impaired, and the speech more or less incoherent.

A decline of energy is often the precursor; and after long continuance of the disease, the muscles of the paralyzed part become, from disuse, flaccid and diminished in size.

The partial palsies will be described below.

When the brain, heart, or lungs are attacked, death soon ensues.

Causes.—Whatever tends to compress the brain; impaired nervous energy, determination of blood to the head after suppressed

discharges or eruptions on the skin, apoplexy, certain poisons, old age.

A sense of pain or of itching, with a return of sensation in the parts, is favorable; so also is the return of any previously suppressed discharge. The more vigor remaining, the more favorable.

The palsy of the left side is said to be more dangerous than that of the right, and of the arms than of the legs.

Treatment.—If any apoplectic tendency remain, cupping or leeching, or even blood-letting, with purges, and then we must not be too busy, but leave to time and nature to effect a recovery.

If elderly persons of weak powers are our patients, we must keep up the strength, use the flesh-brush, and give stimulants.

One tea-spoonful of mustard, thrice daily, in some water, or one of the following:

No. 73. Compound spirits of ammonia.....	$\frac{1}{2}$ dr.
Compound tincture of cardamoms.....	2 drs.
Syrup.....	1 dr.
Mint, or peppermint-water.....	1 oz.

Give every six hours.

No. 74. Bruised horse-radish roots.....	2 oz.
Mustard seeds } of each.....	2 drs.
Valerian root }	
Rhubarb root, cut small.....	$\frac{1}{2}$ oz.
Sherry.....	2 pts.

Give two table-spoonfuls every fourth hour.

No. 75. Carbonate of ammonia.....	6 grs.
Compound spirits of sulphuric ether....	1 dr.
Ginger syrup.....	1 dr.
Camphor mixture.....	1 oz.

Give about every four or six hours. Some recommend guaiacum in the following form.

No. 76. Powdered guaiacum.....	10 grs.
Ammoniated tincture of guaiacum.....	1 dr.
Powdered gum arabic.....	40 grs.
Water.....	$1\frac{1}{2}$ oz.

Give every four hours.

One of the following liniments may be rubbed over the parts:

No. 77. Tincture of cantharides } of each.....	1 oz.
Soap liniment }	
Mix.	

- No. 78. Powdered mustard seed..... 1 dr.
 Acetic acid $\frac{1}{2}$ oz.
 Soap liniment..... $1\frac{1}{2}$ oz.
 Mix.
- No. 79. Tincture of cantharides..... 1 oz.
 Spirits of turpentine..... $\frac{1}{2}$ oz.
 Camphor liniment..... $\frac{1}{2}$ oz.
 Mix.

Frequent blisters, or mustard poultices; warm and salt water baths; regular exercise; hand-rubbing; galvanism, or electro-galvanism, cautiously tried. The strychnine is very efficacious; but no one but a medical man should administer such a drug; it requires constant watchfulness.

If bleeding from piles have been suppressed, leeches to the perinæum.

PARAPLEGIA

often is attended with little or no disease in the brain; and it is then functional.

The same mode of treatment is to be adopted as in hemiplegia; only in these cases much benefit is often derived from the tincture of cantharides—thirty drops, thrice daily, for many weeks.

It should not, however, be given to women, nor to any who have disease in the urethra (passage from the bladder).

The cantharides may cause strangury, that is, difficulty and pain in passing the urine; then give barley or toast-water, diluting freely with some carbonate of soda in the drink; and administer a lavement of starch decoction, two or three ounces, and tincture of opium, twenty drops.

When paraplegia results from disease of the spine, the primary disease must be looked to.

PARTIAL PALSY

of certain muscles, or of a joint, may follow an attack of fever—typhus mostly. The shoulder muscles and those of the forepart of the thigh may suffer; or this kind of palsy may be only a precursor of hemiplegia. But this kind mostly attacks the face, and then great alarm is felt of apoplexy; but no alarm need be felt in almost all the cases.

When the nerves of vision are attacked, blindness ensues. When certain muscles near the orbit are attacked, the eyelid can

not be raised, nor the eyeball moved by voluntary power, though the eyeball rises above the upper eyelid the moment the eye is shut. Thus the distinctive symptoms are the dropping of the eyelids and squinting outward.

When the fifth cerebral nerves are implicated, the muscles supplied by them are palsied; the muscles on the temples and side of mouth are palsied, so they remain flaccid when chewing. The sense of taste is lost; one side of the tongue is numb, and the eye and nostril of one side are insensible to any irritation; the mouth is drawn to one side.

When the sixth cerebral nerve suffers, there is a squint inward—double sight, in some cases.

The symptoms of diseased seventh nerve are, whole side of face flaccid and pendulous; mouth drawn to the opposite angle; nothing can be held by the patient between the lips of the affected side; the sound of whistling can not be effected, and on laughing or smiling, one angle of the mouth remains at rest, while the other is drawn toward the ear. On taking a forcible inspiration (drawing in the breath), the nostril on one side collapses, nor can the patient dilate it by any voluntary effort. The eyebrow droops, and can not be elevated when the other is raised, and the eyelids can not be closed. This eye remains open during sleep, and the eye is apt to inflame.

These appearances are very curious. Sometimes these nerves are affected on both sides of the face; but rarely.

The eighth pair of cerebral nerves supply the heart, lungs, and stomach with nervous influence; and a palsy attacking them is as dangerous to life as any attack of apoplexy or hemiplegia can be.

The danger to life is to be predicted in proportion as there is evidence of a coexisting or preëxistent disease in the brain. The palsy of the fifth, eighth, and ninth nerves are usually the most dangerous; but a palsy of part of the fifth is frequently caused by exposure to cold, or to cold air, as in a carriage, etc. It is curious that Dr. Christison, from whose graphic account of these palsies the preceding abstract has been taken, says he has met with facial palsy, but never with numbness.

It must be a comfort to know that these are cases which would seem to threaten palsy or apoplexy, yet which involve no danger to life, and, moreover, are often easily curable.

Treatment.—Blisters, to be repeated, or croton-oil liniment may be rubbed in; so may other stimulating embrocations. A warm drink in bed at night, with a dose of James's powder to elicit perspiration.

If these do not remove the symptoms, give what are called alterative doses of calomel—one grain three times a day; but salivation must be avoided, and the gums, therefore, must be watched, so as to stop in time.

If the patient be in bed, add tartar emetic one-sixteenth of a grain, or three grains of James's powder, to each dose.

INDIGESTION—DYSPEPSIA

is thus described by Cullen: Want of appetite, nausea, vomiting, flatulency of stomach, acid eructations, rumination, heartburn, and pain at the pit of the stomach, with costiveness.

One or more of these symptoms are met with, and sometimes all.

Symptoms.—To those above stated, general debility, languor, and aversion to motion; depression of spirits, sense of fullness and oppression after eating; heartburn very troublesome; appetite irregular; costiveness, or sometimes diarrhea; small pulse, quickened after eating, or on exertions being made; perhaps palpitation; flushed face after eating; tongue dry, and mostly white in the morning; urine may deposit, and usually does deposit, either a red sediment (the lithic or uric acid) or else a white sediment (the phosphates), with an oily appearance floating on its surface; then the skin and feet become cold; the face sallow; headache, dry skin, or else damp sweats; disturbed sleep, and hectic fever.

The vomiting is a most distressing symptom; it sometimes comes on as soon as food has been taken; at others, in one or two hours, and the matters ejected are sour. If the vomiting continue long, yellow bile will be at last pumped up, giving many persons reason to think that the liver is not performing its functions properly, and is the cause of the indigestion, whereas the bile is ejected by an inverted action of the bowel called the duodenum, which is the immediate continuation of the stomach.

The flatulence and belching may arise from gas, which has been extricated from undigested food, detained in the stomach in a state of fermentation, or it may have been secreted by the

stomach itself; for this symptom arises sometimes when there has been no food in the stomach. The distention caused by this gas is very distressing indeed in some cases.

The pain comes on at various times, and under various circumstances. Dr. Pemberton tells us that it may occur from organic disease; but when it forms one of the signs of dyspepsia, it may occur when the stomach is empty, and might arise, he thought, from an increased and altered secretion of the glands of the mucous membrane of the stomach; and, secondly, it may occur when the stomach is full, and he thought it arose from irritability of the muscular coat, and not from any altered secretion.

Dr. Abercrombie says pain occurs under four forms. The first is observed when the stomach is empty, and is relieved by taking food; as Dr. Pemberton also said, the food enveloping the secretion, if it is in small quantity; if it is in large, it is thrown out by vomiting.

The second form is when it arises directly food has been taken. Here Dr. Abercrombie suspected undue irritability of the mucous membrane of the stomach, or a sub-acute inflammation.

In a third form, the pain begins after a meal, but not till from two to four hours have elapsed; here the pain would seem to be in the bowel named the duodenum.

In a fourth form, the pain is extremely violent, and attacks in fits or paroxysms, often affecting hysterical females, shooting up to the shoulder, and proving very intractable.

The remedies for these four forms of pain will be mentioned in the treatment.

By the vomiting, a thin, watery liquid is ejected, sometimes sourish, but usually insipid and tasteless. This is the water-brash, or, technically, pyrosis. Its paroxysms come on in the morning and forenoon, when the stomach is empty, with pain and a sense of constriction at the pit of the stomach, as if the stomach were drawn toward the back; the pain is increased in an erect posture, wherefore the body is bended forward. This water-brash is mostly an attendant on organic disease, but not necessarily so.

Causes.—Every thing which is debilitating to the system or the stomach—intemperate use of food or drink, spirits in particular; in tea, tobacco, or opium; imperfect mastication; sedentary habits; too much study; certain depressing affections of the mind; errors in diet; disease of the liver; hysteria; exposure to moist and cold

air; deficiency or depraved secretion of the bile, or saliva or gastric juice.

Treatment.—We must first regulate the diet, both as to quantity and quality, for the less the stomach is distended beyond a certain degree the better; and we must not forget that the supply of the gastric juice is always exactly regulated by the demand for it, the quantity of the secretion corresponding with the quantity of the food. But, then, it must also be borne in mind that the amount of the secretion is never greater than the requirements of the frame would demand, whence it follows that whenever the food is too great, or exceeds the demand of the requirements, a portion of the food will remain undissolved, and so disturb the due digestion of the rest.

Then Dr. Abercrombie tells us that various articles of food are soluble in various degrees in the stomach; and, therefore, if in a weakened stomach articles of food are introduced of different degrees of solubility, the digestion will not be performed so well as it should be. Thus another rule is established in dyspepsia, which is, for those threatened with it, to dine off one dish; for, by so doing, we not only avoid an injurious mixture of food, but we escape a probability of eating too much, by thus avoiding too much provocation or gratification of the taste by new and varied flavors.

The patient should masticate slowly, should eat at regular hours, and drink but little during and for a short time after taking food; also, active exercise must be avoided, for some two hours, at least, after digestion has commenced.

We must first ascertain whether high irritation or a slight degree of inflammation may be suspected to exist in the mucous membrane of the stomach, from the tenderness or pain at the pit of the stomach, and also from the state of the tongue, which is red at its tip and edges, as well as the more frequent pulse and greater febrile increase of symptoms in the evening; or whether the disease depends on mere debility of the digestive organs. In the former case animal food is not admissible, and, if taken, it will add to the patient's sufferings; then the lightest farinaceous food must be taken, while leeches to pit of stomach and fomentations, with alkaline fever draughts, are the proper medicines for such a state of sub-inflammatory irritation.

But where there is mere debility of the digestive organs, ani-

mal food will be preferable; and meat is to be preferred to animal jellies, since jellies remain long in the stomach, from their indigestible nature, causing disturbance and distress.

Meat, again, should be that of full-grown animals, and not of young ones; for more mucilaginous matter is contained in the flesh of young than of full-grown animals, and mucilages are of difficult digestion.

Tender mutton, beef, or venison, and all kinds of game, are usually of easy digestion. Pork and veal are inadmissible. Fish will often not agree; and when eaten, only small quantities of boiled fish are allowable.

Geese and ducks do not suit dyspeptics, while turkey is more oppressive than fowl. Fowl is, next to mutton, the lightest of animal food, but the skin must be avoided.

Of game, the pheasant is least easy of digestion; partridge and hare are readily digestible.

Soft-boiled eggs agree with many persons; but the peculiarities of different stomachs as to digesting articles of food are most extraordinary; wherefore the medical man can only lay down general rules, and leave exceptional cases to each individual's own management. The author attended a gentleman who could, with pleasure, eat and readily digest a hard-boiled egg; but if he were to eat one lightly boiled, it would stir up an immediate disturbance in his stomach, and seem to act like a poison or irritant; for there was no ease till some loose, bilious looking evacuations had passed from the bowels. My patient was in no degree fanciful, and was, moreover, a medical man.

All food should be roasted or boiled; frying is highly objectionable.

Some like new-made bread; but no aliment is perhaps more offensive to the weak stomach than this. By mastication it is converted into a tenacious paste, which is not easily pervaded by the gastric fluid.

Bran bread is useful, especially in costive habits.

The bowels must be regulated by a pill of blue pill and compound extract of colocynth, three grains of each, and a seidlitz powder next morning; then, if red tongue and feverishness prevail, with increased pain from hot liquids, a few leeches to the pit of the stomach.

The distressing symptoms must be alleviated; the

VOMITING

by reducing the food to what can be easily borne and digested, and by the draughts of bicarbonate of potash and hydrocyanic acid, No. 7. The carbonic acid is powerful in assisting the vomiting, and the potash acts upon the acid products in the stomach, neutralizing the lactic acid, which is formed in imperfect digestion. Alkalies will be useful so long as the urine deposits an acid sediment. It should be tested (see GRAVEL), and if it become alkaline instead of acid, the nitric and muriatic acids may be given, 5 to 10 drops of each dilute acid.

FLATULENCE.

Peppermint-water and other carminatives, with 20 grains of soda; and for the flatulence which follows eating, take immediately before the meal 5 grains of extract of rhubarb, with one grain of cayenne pepper. For rumination, the soda or potash, with a tea-spoonful of sal volatile.

PAIN.

For the first kind of pain, give a tea-spoonful of the aromatic spirit of ammonia, or half an ounce of liquid magnesia in camphor julep. Food relieves, or ten grains of powdered kino and half a grain of powdered opium. For the second, the alkaline draught, with tincture of henbane or of opium, 10 or 15 drops.

The third kind requires also the alkaline draught, as it depends on acid secretions or formations; an alkaline draught immediately after dinner; warm tea relieves.

PYROSIS, OR WATER-BRASH.

For the fourth kind, carminatives, mustard poultices. Here the compound powder of kino, ten grains, with aperients to obviate costiveness.

Wine or spirits are better avoided throughout. (See DIET.)

Some of the tonic infusions (see FEVER) may be the vehicle for the soda or potash.

Dr. Abernethy says that six hours should be the interval between meals; the stomach should get rid of one meal before it has to digest another. Medicines may do much good in indiges-

tion, but the only sure preventive is to attend to the diet, with a summary of which we will close this article.

Strong coffee, or tea, with toast, for breakfast—sugar and milk with the liquids; but as the sugar contains impurities, the author has recommended some patients never to use any thing but syrup; a lightly-boiled egg is allowable.

For dinner, animal food well cooked, but never fried. Mutton, venison, some poultry, winged game—but never dressed a second time—may be allowed; but fat meat, gelatinous meat (young pig, lamb, or veal), and strong soups; such fish as salmon, mackerel, herring; fish-sauces, melted butters are to be avoided.

Stale bread alone to be eaten; all kinds of pastry bad.

For vegetables, cauliflower, asparagus, young peas, French beans, and mealy potatoes, always well boiled, may be eaten, and agree with the majority.

Fruits had better be eaten before than after dinner—strawberries, mulberries, peaches, nectarines, oranges, and grapes, may be usually eaten; but figs, currants, gooseberries, apples, plums, cherries, apricots, melons, and all kinds of nuts should be interdicted.

If wine is urgently demanded, good genuine sherry and water is the best; the fine, dry, non-acescent wines are alone admissible.

HYPOCHONDRIAC AFFECTION, VAPORS, LOW SPIRITS, HYPOCHONDRIASIS.

This disease, according to Pinel, should be called biophobia; for the low spirits of the sufferer have led to suicide at times.

It occurs mostly in the melancholic. Its signs are sadness, want of resolution and activity, fear of danger to life, particular attention to health. The bodily functions do not suffer materially; there may be some signs of indigestion in some cases, but imaginary sufferings and symptoms are detailed.

The cause of this singular malady is supposed to be a nervous affection of certain nerves, called the ganglionic system—a neuropathy, technically.

Treatment must vary with the varying states. Symptoms of indigestion are to be treated as in dyspepsia.

We must not ruffle the sufferer's mind, nor rudely contradict him; nevertheless, we must not trust to his statements of his

sufferings, for, self-deceived, he details imaginary ones; and the author has been told of utter sleeplessness, and want of appetite, when the servant, who always slept in his master's bed-room, had informed him that his master had slept all night like a top, and had eaten an excellent breakfast.

Change of scene, watchfulness, and time very often effect sound cures when medicine could do nothing, except in the relief of urgent symptoms.

HYSTERIA. (See DISEASES OF WOMEN.)

EPILEPSY.

A sudden deprivation of the senses, with violent convulsive motions of the whole body, characterize this dangerous and alarming disease.

The fit comes on at uncertain intervals, and lasts a longer or shorter time—generally from five to ten minutes.

A cry precedes sometimes, or a feeling as if a stream of cool air were passing over the arms and legs upward toward the head; the convulsive motions of the limbs and body are violent; facial muscles are distorted; eyes fixed and staring, or turned upward; hands clenched, thumbs turned in upon the hands; face swollen and livid; foam or froth issues from the mouth; the tongue often bitten; the excretions are expelled involuntarily. To all these urgent symptoms a state resembling sleep succeeds, but it is only insensibility, which, however, is followed by a sleep of some hours.

The attack is usually at night, while asleep; and thus these convulsive motions differ from those in St. Vitus's dance, by the latter occurring in the day mostly.

The causes are various, some capable of removal, others not so, being dependent on incurable organic disease.

Treatment of a curative nature, it must be candidly confessed, ought well-nigh to be despaired of, unless in cases arising from irritation in the bowels or elsewhere, which produces an effect on the brain, through what is now called the reflex system of nerves.

Here treatment is effective, and the author has treated several such cases, and might have deluded himself into a belief that epilepsy was much more curable than it is. In some cases, worms

have been exciting such fits, and worm medicines, with tonics, removed all attacks; in others, there have been irritating secretions in stomach or bowels. Here he has given:

No. 80. Calcined magnesia.....	1 dr.
Epsom salts.....	1 oz.
Dilute hydrocyanic acid.....	8 drops.
Peppermint, or distilled water, or infusion of gentian.....	8 oz.

Two table-spoonfuls two or three times a day, as the bowels are acted upon. The Epsom salts may either be diminished in quantity after a time, or discontinued altogether.

If the fits leave behind them a state of congestion, as shown by a clouded state of the mental faculties, giddiness, etc., five grains of blue pill, or one grain of calomel for four or six nights, would be useful.

The worm remedies are detailed under the head of worms. Suppressed evacuations should be reëstablished, if possible.

An attack between the fourth and tenth year is often curable; but if it arise in one who has attained twenty-five years of age, it is apt to continue during that person's life; this is, however, not invariably the case. Remove all exciting causes that are removable.

Epilepsy forms one of the most fertile fields for the quack that can be devised. The more incurable the disease, the greater number of infallible remedies are proclaimed; all of them are tried with eager hope, and with excellent profit to the quack, whose promises of cure rise with the occasion.

Ammoniuret of copper, oxyde, and sulphate of zinc, nitrate of silver, arsenic, wormwood, the wall pennywort, or cotyledon umbilicus, the root of the peony, the agaricus muscarius, artemisia vulgaris, or mugwort, with a long list of other so-called specifics, may be mentioned. But there is no known specific, and treatment must vary according to the state of the patient.

A late writer in the *London Lancet* of February, 1854, says: "A rational investigation must be made as to whether there is exalted sensibility or a tonic lethargy, whether there is congestion or repletion."

He suggests, where there are warning signs, to administer a lavement of one ounce spirits of turpentine in eight ounces of warm gruel, and to apply mustard poultices to nape of neck.

Dashing cold water in the face is sometimes useful.

Where there is a full habit, nothing but lowering the diet, to what many would call starvation point, will prolong life, and prevent attacks in such persons.

The writer attended, some years ago, the father of a family of ten children, all solely dependent on his exertions, whose life was repeatedly endangered by the violence and frequency of the fits. He was put upon a very spare diet of vegetables and farinaceous food, neither touching meat nor even fish. No medicines, except an occasional aperient, were given. He has now survived many years, and, though thin, is very active in his business, traveling and bustling about with his bit of dry, brown, branny bread in his pocket.

If, on the contrary, the patient is of weak powers and debilitated habit, the diet must be nutritious, though as unstimulating as possible; and meat once a day, with some green vegetables, may be advised; ham and bacon to be avoided; beer (not sour), cocoa, tea, or coffee may be allowed.

Sleep on a mattress, and avoid excitement of mind or over-exertion of body. During the fits, cold to temples and forehead, or cold douche in a few cases; with flushed face, beating of temples, and bounding pulse, blood-letting, or leeches. Let not the patient receive hurt during the struggles and convulsive movements; put a bit of soft wood between the teeth, and have help to keep the patient down.

The main point to look to is the prevention of fits by attention during the intervals; and as we never can be sure whether the disease is incurable or not, we should cautiously try any remedy which may be tried by an unprofessional person.

Arsenic, the nitrate of silver, and some others, should only be prescribed by the medical man.

ST. VITUS'S DANCE. (See DISEASES OF CHILDREN.)

SARDONIC LAUGH

consists of a violent fit of laughing, arising from no evident cause, and continues for three or four nights, preventing sleep and causing debility. It is so called from similar symptoms arising from eating a poisonous herb growing in Sardinia.

Little can be done by medicine. Opium should be given, and musk, assafetida, camphor, and ether may be tried.

TETANUS, OR CRAMP.

This disorder is a fatal one when severe, and it may arise from wounds or bruises which are apparently slight. It is, therefore, either symptomatic, or it may arise from exposure to cold when perspiring. The latter kind is not unfrequent in hot countries, rare in Europe.

Symptoms.—No premonitory signs; stiffness of jaws, pain and oppression at pit of stomach; the teeth become closed. This is trismus, or locked jaw.

The spasms extend to the muscles of the back, when the patient lies resting almost on head and heels, the spine forming an arch; or the muscles on the front of the body are affected; then the body is bent forward, the belly feels hard as a drum, the spasm extends to the arms.

The intellectual functions are not implicated.

The fits recur every ten or fifteen minutes; violent pain from stomach to back causes much suffering, the eyes are immovable, and the face is peculiarly and shockingly distorted, till a fatal spasm takes place, and death.

When it proves fatal, death happens before the tenth day; but Professor Robinson records a case of a negro, whose thumb was lacerated in breaking a china dish, which caused death in a quarter of an hour.

Dr. James O'Beirne says the period of recovery may extend from eighteen days to eight or nineteen weeks, and there are no critical symptoms.

Causes.—Predisposing are—the male sex—a vigorous, plethoric habit, warmth of climate, autumnal season.

Exciting are—exposure to cold, or to excessive heat, injuries, in the shape chiefly of lacerated (torn, ragged) wounds, which penetrate the sheaths of muscles (called fasciæ); those which do not penetrate the fasciæ are not followed by tetanus, nor does it attack often after the wound has cicatrized (healed), nor during the inflamed state of a wound; it does not supervene upon burns, scalds, nor injuries of the skin, provided such injuries do not affect the fasciæ.

This kind of tetanus arises in from four to seventeen days after the infliction of the wound.

Irritations of stomach or bowels; mental emotions are also causes.

We may indulge some hope of recovery when cold has been the originating cause, when the fits are not very frequent, and do not quickly advance to a violent degree.

Treatment.—Acute tetanus is fatal, under almost every kind of treatment, and the writer has seen almost every remedy which has been recommended tried in vain.

Opium has answered best in large quantities; one lady took forty thousand drops daily, and recovered—cured one dare not say.

The only remedy from which any benefit was derived in the author's practice was tobacco, in form of clyster; for the clyster relaxed the locked jaws long enough to permit nourishment to be given. The benefit was, however, only temporary.

But Dr. James O'Beirne's plan seems the only one likely to do permanent good. By it eleven out of twenty cases recovered. He threw up lavements of tobacco by a long clyster tube, so long as to throw the fluid high up into the bowel. To do this, requires care in introducing the pipe.

Tobacco Clyster.

No. 81. Tobacco leaves	20 grs.
Boiling water	$\frac{1}{2}$ pint.

To stand for an hour; then strain for use.

He also gave croton oil to clear out the whole tract of the bowels, and to act as a derivative.

With these the writer would apply pounded ice, by means of an ox-bladder, to the spine, and perhaps give opiates.

To publish what has been tried in vain would be useless. As draughts of cool air are known to excite the paroxysms, they are to be avoided; and as to the wound, any splinters remaining in it must be extracted, and poultices assiduously applied to promote the formation of matter.

CRAMP

may seize upon the arms or calves of the legs, and often at night. Where people are subject to these painful attacks, the author has prevented them by the following draught every night.

No. 82. Bicarbonate of soda.....	30 grs.
Compound spirits of ammonia (sal volatile)	30 drops.
Water.....	1 oz.
Syrup (if desired)	1 dr.

But aperients must be given occasionally, and the diet looked to, so that there may be no undigested food in the stomach on going to bed.

The following liniment may also be kept at hand by the bedside :

No. 83 Liniment of soap.....	6 oz.
Tincture of opium.....	1 or 2 oz.

Rub with this, or rubbing with the bare hand will relieve. If in the leg, keep the heel down; if in the arm, keep it straight.

HICCUP, OR SINGULTUS,

though not dangerous, is often very troublesome, and may continue for a considerable time.

It depends on acid, or some irritating matter in the stomach, and relief will be obtained from the soda, etc., draught No. 83.

WHOOPING COUGH. (See DISEASES OF CHILDREN.)

BREAST PANG, OR ANGINA PECTORIS.

An acute constrictory pain at the lower end of the breast-bone, rather on the left side and extending to left arm, accompanied with great anxiety, palpitations at the heart, impeded breathing, and a sense of suffocation, mark the attack.

The patient is attacked usually while walking, and especially while walking up an ascent, or facing particular winds. He stops immediately, and the distress may soon vanish.

But after repeated attacks, slighter causes produce one, and the fits are more violent.

At a more advanced stage the pulse becomes weak, intermits, or is irregular; the countenance becomes pale; there is constant cough, with an ejection of thick mucus; cold sweats; the sufferer can not lie down, and, ere long, death terminates existence.

Causes.—It is most common to studious and sedentary persons, and those of gouty or rheumatic habit, and after the age of fifty. As various functions and organic disorders of the heart

either accompany or cause this affection, all exertions, or sneezing, coughing, straining, or even speaking, will bring on a paroxysm (fit).

Treatment.—During the attack, distressing symptoms must be relieved. Stimulants should be given; as a glass of spirits and water, with fifty or sixty drops of tincture of opium in it, and repeated in twenty minutes or thereabouts; or this mixture, which the patient should always carry about him:

No. 84. Compound spirits of sulphuric ether.....	$\frac{1}{2}$ oz.
Aromatic spirits of ammonia.....	1 dr.
Tincture of opium.....	2 drs.
Camphor mixture.....	7 oz.
Mix.	

Two table-spoonfuls every half hour until relief ensues.

Putting the feet into hot water, if feasible, directly, may relieve. Some recommend a mustard poultice.

This liniment should always be at hand:

No. 85. Soap liniment.....	$5\frac{1}{2}$ oz.
Extract of belladonna.....	$\frac{1}{4}$ oz.

Rub over the chest-bone about a table-spoonful of this liniment. During the intervals the sufferer must try to remove and avoid all the exciting and other causes. If there is fullness of habit, it must be reduced by a spare diet, and by avoiding every thing heating, or any thing exciting to the mind.

Issues, setons, have been recommended.

The digestion must be specially attended to; for imperfect digestion, or too full a stomach, is very likely to bring on palpitation, and with it the fits. For flatulence give a soda draught, with sal volatile and one drop of hydrocyanic acid.

FAINING, OR SYNCOPE.

The symptoms of complete syncope are not unlike those of sudden death, and in some few cases death does ensue.

A person about to be attacked with fainting feels a great inward distress and faintness; the eyes become dim; there is a singing or buzzing in the ears; the face and lips lose their color; the person becomes unconscious, cold perspiration follows; the person falls to the ground, and the respiration and pulse cease for the time.

Vomiting, convulsions, and a fit may terminate the attack.

Causes.—Mental emotions; blood-letting beyond the powers and strength; nervous irritability, debility, excessive pain, diseases of the heart.

Treatment.—During the fit, which may persist for some minutes, though usually it lasts only a few seconds, lay the head low, and keep it so.

Apply stimulants to the nostrils.

Administer a lavement of two drachms of pure water of ammonia in a pint of warm water. This has been successful in several cases.

Sprinkling cold water over face and forehead.

When the power of swallowing returns, the mixture No. 85, without the opium.

To prevent the recurrence, if there is debility, give bark, steel, tonics.

GIDDINESS OF HEAD—VERTIGO

is usually a symptom of other ailments, and must be treated as they are. It is often one of the first signs of a coming mischief in the head, and should not be neglected.

ASTHMA.

This disorder is marked by difficulty of breathing, coming on in its fits or paroxysms, usually commencing at night, during sleep. Great anxiety, stricture across the breast, palpitation, and a short, dry cough attend; the breathing becomes wheezing, laborious, gasping, and even suffocative, while the countenance betrays anxiety. Fresh air is urgently sought, wherefore the patient rushes to the open window from the bed in which he can no longer lie recumbent. The surface is cool; face bloated and livid, or pale; the veins of head and neck are swollen; the pulse varies—may be intermitting, or too active and full, or natural. These symptoms continue a certain time, when the breathing becomes less laborious and anxious, and, toward morning, copious expectoration ensues, with relief.

During the ensuing day the sufferer is pretty comfortable, but on the next night the fit returns, and this series of occurrences goes on for four or five days longer before it finally subsides. This is what is called humoral asthma; but there is a state of

congestive asthma in which the expectoration is much less copious than in the former, and there is also a state of what is called dry or spasmodic asthma, in which little or no expectoration is visible.

The urine during a fit is usually, at its commencement, pale or colorless and odorless; but after the fit has terminated, it is of a high color, and deposits a sediment.

Causes.—Heart diseases, in which, of course, the asthma is merely symptomatic; strong mental emotions; hereditary tendency; full meals; exposure to cold and moisture; certain effluvia, as those from ipecacuan, hay, noxious vapors, any internal irritation; rheumatism or gout.

If asthma have once attacked, the fits are apt to return periodically, or when excited by certain atmospheric changes; certain vapors; indigestion; obstructed perspiration; increase of the circulation from over-exertion.

This disease is more susceptible of cure when it occurs in an early period of life, and in habits not much debilitated; also when it arises from accidental causes or from internal irritations, capable of being removed; but frequent fits, weak pulse, palpitations, and great impairment of the powers, with the threatening of other diseases, dropsy of the chest or limbs, denote an unfavorable issue.

Treatment.—The violence and duration of the paroxysms must be reduced. Small bleedings in full habits, or when there is great oppression at the chest, with full pulse, may be ordered; if pulse is small, dry cupping. The following assafetida clyster is very useful, speedily removing or moderating the distressing flatulence.

No. 86. Sulphate of magnesia (Epsom salts)....	$\frac{1}{2}$ oz.
Olive-oil.....	1 oz.
Sugar.....	1 oz.
Tincture of assafetida.....	2 dr.
Boiling water.....	12 or 16 oz.

Dissolve the salts and sugar; add oil and the tincture when nearly cold.

Expectorants, as tincture of squills, twenty drops, in an ether mixture.

The Indian tobacco, lobelia inflata, in some cases, acts like a charm. From half a drachm to a drachm of the tincture, and the tincture is made by putting one ounce of the herb in half a pint

of alcohol. This, however, in some cases, acts like a poison, depressing the pulse and nervous energy; so, if one dose do not give some relief, it had better not be repeated.

In the debilitated, stimulants, strong coffee, ammonia, and ether, with opium, must be given.

Inhaling ten drops of chloroform, but no more, unless under a medical man's eyes. A warm foot bath sometimes relieves.

To relieve the distressing flatulence which often precedes the fit, Dr. Guy recommends alum 10 grains, ginger 5, and rhubarb 3 or 4 grains, three or four times a day.

Where oppressed breathing remains after the fit, the congestion should be removed by small doses of calomel, one grain, night and morning, with five grains of Dover's powder, for seven or eight days. Between the fits, take care of the diet and bowels; tonics, with alkalies and expectorants.

The shower bath or cold water sponging has prevented fits. If there is any tenderness in the spine, rub it with stimulating liniments, or with the following lotion, which may bring out an eruption of yellow-headed, angry-looking pimples; then rub no more, but poultice:

No. 87. Tartar emetic.....	40 gr.
Rose or distilled water.....	2 oz

Dissolve, and add of tincture of cantharides one ounce.

The belladonna liniment (No. 86) may be useful, or belladonna plaster, either during or between the fits.

CANINE MADNESS.—HYDROPHOBIA, OR DREAD OF WATER.

This terrible and fatal disease arises in from six weeks to eighteen months after a bite from a rabid animal, either dog, cat, fox, wolf, or jackal, and some say 'sheep. The wound, it may be, has long healed, but a painful sensation arises in its site, and it often becomes red. The pain extends upward to the body; the patient feels ill, then irritable, and feels a stiffness and pain about his neck and throat; then, unexpectedly, he finds he can not swallow any liquids, and every attempt to do so brings on a paroxysm of choking and sobbing most distressing to behold.

There is thirst; the saliva becomes thickened, is secreted in greater quantity than usual, and escapes from the mouth in a frothy state. This escape of saliva renders the breathing rather

difficult, and increases the noisy gasping of the patient, giving rise to the idea of his barking like an animal.

The patient is in an extremely irritable and excited state; and owing to this, a current of air, the waving of a polished surface, and the noise of water falling or being poured from one vessel to another, brings on or increases the paroxysm. He makes no attempt to bite or hurt any one, and there is no delirium.

Death may take place within twenty-four hours after the commencement of the specific symptoms; but it commonly happens on the second or third day, though it may be postponed until the seventh or eighth.

In some cases liquids can be swallowed before death.

The symptoms of this disorder in the dog are, he becomes heavy, dull, and knows no longer those to whom he has been attached. He snaps at the air, drinks his own urine and dung, and swallows dirt, straw, and other articles within his reach. He roams about with back arched, and tail drooping; he runs or swims through water without difficulty. He will bite other animals if he comes near them, but will not go out of his way to do so. Other dogs avoid him; the voice is altered, the bark is between a bark and a howl, ending with a short howl. This howl is peculiar, and the dog dies in from six to eight days after the first attack.

Rabies is as frequent in spring, autumn, and even winter, as in summer. M. Trollet says that January (the coldest month) and August (the hottest in the year) are the very months in which the fewest examples are met with.

Dr. Madden says that one in sixteen of those bitten have the constitutional disorder; but Scarpa deems this too low a calculation. Out of one hundred and thirty-one bitten, only one manifested hydrophobia by the third day, and only three before the eighteenth.

The period of greatest danger is between the fourth and sixth week. After this, the longer the period the less danger. From six weeks to three and a half months is the average period during which the poison may lie latent. Dr. Parry says the shortest period is twenty-three days, and the average period is forty-five days, so that we may place the minimum period at twenty-one days, the maximum at nine months.

The saliva or mucus contains the poison; the poison, however,

ceases with the life of the animal. It must be introduced into the system by a bite, or by application of it to an abraded skin. But horses are said to have gone mad after eating straw on which rabid pigs have been lying, or the fluid may be deposited on the claws of animals, as cats, etc., and be so inoculated.

We must distinguish hydrophobia from tetanus. In the former the slightest draught of air, a sudden touch, or smallest drop, or even the sight of water, bring on the choking spasms; not so in tetanus.

Treatment is very unsatisfactory; prevention is every thing. But, fortunately, few who are bitten become affected, owing to the saliva being left in the clothes above the bite, or to the poison not being intense.

Let a surgeon take out the bitten part. If none be at hand, heat a wire to a great or even a white heat, and cauterize the part; and some courageous persons have cut a bit of stick the size of the bite, put it into the wound, and cut out all round it.

Sucking or a cupping-glass to the wound may prevent.

Mr. Youatt trusts to the lunar caustic (nitrate of silver), which is made like a pencil. Put this wetted to the bottom of the wound; then poultice. He has thus operated on and saved four hundred persons, not losing a single case.

Dropping strong nitric acid or caustic liquor of ammonia into the wound may be practiced if no lunar caustic be at hand; but the local application should be made as soon as possible after the bite has been received.

As to preventive drinks or specifics, numbers have been tried in vain—guaco, the Ormskirk powder, etc. They are only useful in filling the pockets of the quacks.

COLIC

is a painful distension of the lower region of the belly, accompanied by a twisting pain around the navel, by vomiting, costiveness, and spasmodic contractions of the muscles of the belly.

This disorder is divided into several species.

1st. The spasmodic form.

2d. That arising from costiveness, or from acrid matter in the bowels.

3d. That from lead poison.

4th. That in newly-born children.

5th. That from calculi, or concretions in the bowels.

6th. That from worms.

It is highly important to distinguish colic from inflammation of the bowels, which latter disease may prove fatal, and in which most active treatment is requisite. In inflammation of the belly there is fever, with tenderness and pain, increased by pressure, and by the breathing even. In colic there is no fever, and pressure will give ease, the patient often lying on his belly to obtain more ease. The pain, too, in colic comes on in fits of very violent pain, which succeed intervals of ease. However, we must not forget that long-continued colic will now and then bring on inflammation.

Treatment.—Should the sufferer be young and vigorous, some blood may be taken or leeches applied.

If much nausea and bilious vomiting attend, give the saline draughts while in effervescence, adding to each twenty to thirty drops of tincture of opium.

When the sickness is abated, give blue pill four grains, calomel two grains, and compound extract of colocynth four grains, in two pills. In about three or four hours give the salts and senna mixture; but in all cases administer lavements or enemas. When much flatulence attends, nothing succeeds better than the assafetida clyster, thus prepared:

Assafetida Clyster.

- | | |
|--|-------------------|
| No. 88. Take of prepared assafetida..... | 1 dr. |
| Decoction of barley..... | $\frac{1}{2}$ pt. |
| Mix. | |

Throw the fluid up as high as feasible, but gently. Give carminatives.

- | | |
|-------------------------------------|-----------------|
| No. 89. Camphor..... | 5 grs. |
| Spirits of sulphuric ether..... | 30 drops. |
| Tincture of opium..... | 20 to 40 drops. |
| Compound tincture of cardamoms..... | 1 dr. |

Rub together and mix, then add water one ounce. Or this:

- | | |
|---|--------------------|
| No. 90. Compound tincture of cardamoms. | 1 drachm. |
| Tincture of opium..... | 30 drops. |
| Peppermint-water | 3 table-spoonfuls. |
| Mix. | |

Repeat this according as the pain seems to demand.

The writer recommends flatulent persons to have these drops always at hand :

Anti-flatulence drops.

No. 91. Liquor of potash.	} each 1 oz.
Strongest (saturated) tincture of ginger.	
Compound spirits of ammonia.	

Mix, and add of cyanide of potassium $1\frac{1}{2}$ grains. Keep the bottle cool, well-corked, and covered from the light, and before using shake the bottle well.

The dose is sixty drops in an ounce of water, or of peppermint or aniseed water.

The warm bath or opium poultice, or hot flannels and fomentations will relieve. The diet must be looked to between the attacks, so that as little irritating matter as possible may have to pass through the bowels.

But there is a kind of colic, arising from concretions, or irritating matters in the bowels, or from one portion of the bowel slipping into another lower portion, and it has been called the

ILIAC PASSION.

This arises in many cases from mechanical obstruction of the bowel, and the symptoms, from commencing with those of colic, soon assume those of inflammation of the bowel, the inflammation being a consequence of the obstruction.

Symptoms.—Costiveness. Aperients are taken without effect, and when repeated, griping, nausea, and sickness follow. Clysters are given; some hardened masses are brought away without relief; then fever symptoms set in, with vomiting of matters, that at last look as if they consisted of the excrementitious matter itself.

Prostration, with hiccup, cold sweats, and failing pulse, precede death. In the case of intestinal concretions, they first obstruct, mechanically, the passage through the bowel; then inflammation supervenes, and mortification.

The symptoms are much the same as those of ileus, only that, in emaciated persons, the concretion, when it is of a large size, may be felt by placing the patient on his back, with knees bent.

Otherwise, we have no other evidence of their existence than after they have passed away by stool. There is a constant desire

to sit on the water-closet; yet, with all the straining, nothing is expelled until the concretion arrives at the lower part of the lower bowel, where it stirs up great disturbance and the most furious straining. It can then be taken away, being within reach, by a pair of forceps or pliers, or it is at length forced away by the natural efforts.

These concretions are caused to form, by sedentary occupations, inactivity, indolence; by a weak state of the digestive powers; by a large use of magnesia and calcareous earths; by swallowing various other things—the husk and beard of the oat, bones, cherry-stones, or seeds.

Dr. Copland, in a well-written article on Intestinal Concretions, tells us of cases which arose out of either depraved appetite or bad habit, such as that of chewing the ends of thread used in sewing, and which have formed a firm felt with the mucus of the bowels and other matters. In another case, the young lady had been in the habit, from the age of thirteen or fourteen, of chewing, and sometimes swallowing, portions of the gray paper with which she curled her hair. After much suffering, about twelve concretions, from the size of a filbert to that of a walnut, were evacuated.

Treatment.—In such cases, purgatives and clysters are nearly all we can do, with effervescing draughts to allay vomiting; but, first, always make sure, by proper examination, that there is no hernia or rupture.

The writer has had several cases of obstinate constipation in colic, and after trying other remedies, he has succeeded in eliciting motions by the tobacco clyster; only we dare not administer tobacco if there is much prostration; but assuredly tobacco powerfully relaxes the bowels; still, care is indispensable, and it is almost too dangerous a remedy for any one but a medical man to use.

Those who are liable to colic should be very cautious as to what they eat; for the author was called to a groom, within a few hours of his death, who had been subject to colic, and who was seized with colicky pains, after eating two golden pippins.

The moribund man received no benefit from any thing, though pain had suddenly left him, from mortification having set in.

After death, a portion of the large bowel was found black and mortified, but contracted in diameter; and in that contracted part

were discovered several of the apple-seeds, and of thin, sharp-edged, stiff capsules of the core of the apple. Yet this slight irritation was sufficient, in one predisposed, to set up an action that unfortunately terminated in death.

COLIC FROM WORMS.

It would seem that in the economy of nature every species of animal is liable to be infested by its peculiar parasite or parasites, which are developed in and protected by its various textures, and draw their sustenance from its juices; and man himself is subject to a greater number of parasites than any other living being.

In some instances, these parasites have their own peculiar parasites, as in the largest ichneumon of the tiger-moth. This ichneumon seeks, among lettuce, nettles, currant bushes, strawberry beds, etc., for its object of attack; and when it has found a caterpillar, "it seizes it behind its head with its jaws. At this operation," says Mr. Newman (*History of Insects*), "the caterpillar loosens its hold of the plant on which it was feeding, rolls itself suddenly into a ring, erects its bristles as stiffly as possible, and falls to the ground. If the fall is great and among twigs, the ichneumon is sometimes dislodged; but this rarely happens.

"The female ichneumon has three bristles at its tail; and the middle one of these appears to be a tube for conveying its eggs into the body of the caterpillar, and is called an ovipositor. The outer ones seem to serve as protectors to this ovipositor, and not to be used for piercing the caterpillar. When the caterpillar can fall no further, it frequently unfolds itself, and writhes about to dislodge its enemy. But its struggles are useless; the ichneumon elevates its body into a kind of arch, bending the ovipositor formed beneath it nearly to its mouth. It then steadies the ovipositor by its hind legs, and with a slight jerk drives it into the skin of the caterpillar, behind the head. The egg is instantly deposited, the ovipositor withdrawn, and the ichneumon flies away. The caterpillar then remounts the plant, begins to feed eagerly, and there seems to be no difference in its growth afterward.

"The ichneumon's egg is soon hatched, and begins eating that part of the caterpillar which is immediately in its neighborhood,

and continues its course toward the tail, devouring all the fat and muscular parts not essential to life," avoiding, by a wondrous instinct, those parts essential to life, as though it was aware that the cessation of life in the caterpillar would insure its own death, as it could not subsist on the putrefying carcass.

"The caterpillar of the tiger-moth is preyed on in a similar manner by the maggot of a two-winged fly; and this maggot, while thus devouring the interior of the caterpillar, is itself a prey to a minute kind of ichneumon, twenty of which sometimes feed in the maggot of a single fly."

The various worms that infest the human frame are these, in the small intestines (bowels):

The Round worm,
Tænia, or Tape-worm,
Second kind of Tape-worm.

Another kind infests the large intestines. The rectum or lower bowel, the urinary bladder, the gall bladder, the kidney, the eye, the liver, the spleen, the ovary, the bronchial glands, the substance of muscle, the brain, and the cellular texture, all have their respective parasites.

But we are interested chiefly in the flat worms, round worms, and thread worms.

Symptoms are those which proceed from the irritation of worms in general, and those which are caused by each peculiar kind.

From worms infesting the bowels arise pain in the belly, like that of colic, twisting round the navel; though sometimes pain is absent, as is usual in cases of tape-worm, which worm is so soft in its texture as to give rise to no definite sensations, except such as might arise from the length and bulk of the worm interfering with the movements of the intestines. The round worm causes pain more frequently, probably from its firmer texture and sharpened extremities.

These pains, gnawing sensations, etc., may not proceed from worms, and we can not be sure till we have seen some worms, or fragments of them, thrown up by vomiting or ejected by stool.

The evacuations are mostly unnatural in quantity or quality, and there is either costiveness or looseness, or these states may alternate. The stools are of mucous character, or they may be offensive; the belly is swelled, and there is much windy disten-

sion; the tongue is loaded, the breath heavy, and smells offensively.

Irritation about the Anus.—The system may sympathize with this state, and there may be headache, giddiness, ringing in the ears, disturbed sleep, picking of the nose, grinding of the teeth, dilated pupils, convulsive affections.

TAPE-WORM.

The common tape-worm of this country is generally from five to ten feet in length, and in breadth from the fourth part of a line at its anterior part to three or four lines at its posterior part, where it again diminishes.

The head is small, and somewhat flattened.

“These worms are rarely passed entire,” says Dr. Farre, from whose complete account I am extracting; single joints often come away, especially in children, or portions of two or three feet in length are voided; but it is very rarely that the portion on which the head is situated is thus passed. There appears to be no limit to which the worm may grow. If we are to credit the older authors, many hundred feet have been attained; but there appears to be no reason to doubt that worms measuring sixty feet are of occasional occurrence. As many as eighteen or twenty worms have been passed in the course of a few days; but frequently they occur singly.

“The first symptom giving evidence of the existence of this worm is, the passage of a joint or two from the bowels; but there may be the usual signs already described.”

The constitution is more or less affected, sooner or later, in these attacks, though portions may be passed for several years.

Treatment.—Turpentine, when it can be taken, is decidedly the best remedy here. It is best given combined with castor-oil; about three-quarters of an ounce of each should be given, two or three hours after a full meal, rather than on an empty stomach; and broths and mucilaginous decoctions must be freely taken; while, to avoid sickness, the patient should remain at rest.

These doses should be repeated, with intervals of a day or two; but with every precaution. Symptoms of nausea and vomiting, and almost alarming intoxication, ensue, or a “general chill and paleness, and sometimes a tendency to sleep.”

These states will, however, go off after a time. But if turpentine can not be borne, then give the pomegranate root in decoction; or, to a child of nine years of age, twenty grains of the dried bark were given every hour for five hours, when, forty minutes after the last dose, a living *tænia* was expelled.

Decoction of Pomegranate Root.

No. 92. Of the fresh bark..... 2 oz.
Boiling water..... 1½ oz.

Boil down to three-quarters of a pint; two ounces of this to be given every half hour for four doses. But this bark causes sickness, giddiness, and trembling sometimes; it, however, acts like a poison on the *tænia*.

In Abyssinia, a native plant called the kousso is the remedy generally used. This plant is a *brayera anthelmintica*, and the way to use it is this:

No. 93. Of the powdered flowers..... ½ oz.

Infuse, for a quarter of an hour in lukewarm water, ten ounces, for a grown-up person. A little lemon-juice is to be swallowed, and then, stirring up the infusion, swallow the whole, both fluid and solid, at two or three draughts, being washed down with cold water and lemon-juice. To promote its operation, tea, without sugar or milk, may be taken.

In three or four hours, if the bowels have not operated, a dose of castor-oil or a saline purgative should be given. For children a much smaller dose must be given. No very evident symptoms follow the kousso thus taken; but in some cases slight nausea and thirst, or slight vomiting may occur.

This kousso expels the tape-worm; but the worm has recurred in some cases.

In February, 1854, Dr. Budd recommended strongly the oil of the male fern in cases of *tænia*; it does not always cause the evacuation of the head of the worm, but kousso also fails in like manner.

He begins with three grains of calomel and four of scammony, the first night and morning; and at four A. M., the next morning, castor-oil one ounce; then two hours afterward give two drachms of the oil of male fern, mixed up in a sufficient quantity of mucilage of gum arabic. The patient was forty years old. All the

joints, except the head, came away about nine the next morning. The medicine made him giddy and weak; perhaps repeated doses would succeed. The larger the joints are, the further from the head. There are two kinds of tape-worms, one common in this country, the other in Switzerland, Russia, Poland, and part of France; but the treatment is the same for both.

Tonic medicines, bitter infusions, etc., will aid in giving tone to the bowels. Purgatives must be given occasionally to remove the mucus from the bowels, which mucus may be a nest for the worm. Alston recommends zinc filings, giving first a purgative; then an ounce of the filings are to be taken in four ounces of treacle.

THE ROUND WORM.

This is often met with in badly fed children. It exists in the small intestines, but it sometimes crawls upward to the mouth. This worm is from five to eight or ten inches long; it is round and smooth, of a white or yellowish color. It looks like a common earth-worm in some respects, but the mouth, which is marked with three small prominences, distinguishes it.

These worms may exist alone, or there may be a great many in the bowels, and the mucus is much increased. Dr. Hooper tells us of more than two hundred worms having been voided in a single week.

Dr. Heberden states the symptoms to be pains in the head, giddiness, sudden waking from sleep, and unpleasant dreams, fever, thirst, paleness of face, bad breath, picking of the nose, difficult breathing, great craving for food; the patient gets thinner and thinner, bearing down and itching at fundament, slimy motions, swelled belly, grinding of the teeth during sleep. In long standing cases, a thick, nasty-looking eruption appears on the face, sometimes forming one entire crust over it.

Treatment.—Active purgatives.

No. 94. Calomel.....	2 or even 5 grs.
Powdered jalap.....	10 grs.
" ginger.....	4 grs.

Rhubarb may be given instead of the jalap.

To work off these powders, castor-oil or infusion of senna, one ounce and a half; and tincture of senna and of jalap, of each one drachm.

After due action of the bowels, the sulphate of iron, or the tincture of the muriate of iron, is efficacious.

Of the sulphate of iron, one grain may be given three times a day, made up into a pill. For children, the tartarized iron.

Drs. Evanson and Maunsell strongly recommend this electuary:

No. 95. Powdered jalap, crystals of tartar,	
carbo-nate of iron, of each.....	1 oz.
Powdered ginger.....	30 grs.

Half a tea-spoonful three times a day, or treacle may be added, so as to make an electuary.

The writer has found great benefit, in cases of round worm, from giving oil of turpentine and castor-oil mixed, as was recommended in tape-worm.

Bremser gives the following electuary for three or four nights, and says he has seldom occasion to repeat:

No. 96. The seed of the Santonicum or worm seed,	
and the seed of the tansy (Tanacetum),	
both bruised, each.....	$\frac{1}{2}$ oz.
Powdered valerian.....	2 dr.
“ jalap.....	90 grs.
Sulphate of potash.....	$\frac{1}{4}$ oz.

Oxymel of squills, enough to make an electuary.

A tea-spoonful every night and morning for four days, or until an ample purgative effect is produced.

If this electuary be too disagreeable to take, the whole of the above ingredients, except the oxymel, can be made into a powder, and then into pills.

Sometimes we must interpose an active purgative.

THE THREAD-WORM.

This is the smallest worm which infests man, the males of which are about two lines in length, the females about five; their color is white.

These occur often in large numbers, and masses of them are sometimes expelled, enveloped in mucus, or rolled into a ball, and they are now and then found in the neighboring passages, of both male and female. Their chosen seat is the lowest bowel.

The symptoms peculiar to these irritating worms are a great, almost intolerable, itching of the anus (fundament), coming on toward evening, and increased by warmth and exercise.

Besides this irritation, there is usually some dull pain in the part, which is rubbed by the sufferer, until hard small swellings form, in consequence of the friction, which swellings might give an idea of piles, on superficial examination.

There are frequent calls to relieve the bowels, and slimy mucous evacuations are passed, with perhaps some blood in them.

The depraved appetite, the weak digestion, pains in the head and stomach, with giddiness, gripings, sickness, picking of nose, foul breath, cough, and dreaming, disturbed sleep, may, one or more, attend cases of thread worm, as of round worm. The peculiar characteristics are the local itching and uneasiness, which is very great, owing, it is supposed, to the great activity and restlessness of the worm in leaping about.

Treatment of Thread-worm.—The difficulty in managing these cases arises from their multiplying so fast, and from their position, from which it is not easy to dislodge them. Even when we have succeeded in nearly clearing the bowel of them, the few that are left multiply with amazing rapidity. Our objects in treatment are to promote the expulsion of the worms, and to remove the habit of body, or the causes, which favor their formation.

The local treatment is the more important part of treatment; and, first, there should be no rubbing to relieve pain and itching, which may be better done by applying cold cloths to the part, and by lavements of olive oil, or olive oil with a few drops of creosote added, may be used as a liniment externally.

But lavements of simple infusion of quassia are effective, says Dr. Schultz, one drachm of quassia shavings to one or two ounces of water.

Dr. Darwall ordered injections of the tincture of muriated iron, half an ounce; in water, half a pint. He said: "There are few cases so obstinate that this will not suffice to overcome." Or of sulphate of iron, two to five grains; cold water, four to six ounces—an excellent injection.

Lime water, as an injection, is also useful; to it one drachm of tincture of aloes may be added.

To improve the general habit, purgatives, such as one or two grains of calomel, with double the quantity of scammony, will dislodge the worms, and bring away a great deal of mucus, thus depriving the worms of their support.

Jalap, too, is a good purgative.

Mechanical means employed to bring away these worms are, the introduction of a candle, or a piece of lard or pork, with string attached, which will bring away many.

Some introduce the finger, or a scoop.

Tonics must be persevered in—the tonic infusions, the preparations of iron.

Occasional purgatives must not be forgotten.

The diet must be nutritious, but plain, while flatulent vegetables must be avoided in every instance.

GUINEA WORM

infests the cellular structure under the skin, and it is usually met with in the feet and legs, but occasionally in other parts. Its length varies from that of six inches to twelve feet, and its diameter, which is the same throughout or nearly so, is rather more than half a line. The color varies from whitish to dark brown. The outside is marked by minute circles. It is viviparous; that is, brings forth its young alive. It seems that it is capable of changing, though slowly, the positions which it occupies in the cellular membrane, and its final expulsion is effected by a process of local inflammation, which is followed by the formation of pus or matter.

It mostly is single, though in some places as many as twelve, and even fifty, have been found in the same individual. This parasite is peculiar to warm climates, abounding in Upper Egypt, Arabia, Abyssinia, and Guinea.

The general opinion is, that it is introduced into the body through water, as while bathing; in corroboration of which opinion we find that the water-carriers in India suffer from its fixing in the skin of their backs, which is in contact with the leathern water-bottle.

Symptoms.—Uneasiness and itching in the site occupied by the worm, a slight cord-like elevation indicating its seat; a vesicle (little bladder), or a little spot of yellow fluid (pustule) forms, which at length gives exit to the head of the worm. The constitution sympathizes, and there is more or less of febrile irritation.

Treatment.—Never break the worm, for then abscesses would form, with acute inflammation, and cause much trouble. If the worm is short, it may sometimes be extracted at once, but great care is required in pulling on the worm; the moment resistance

is felt, stop all pulling; then, to prevent the protruded portion from going back into the skin, wind it round a piece of sticking-plaster or a bit of stick; keep this in contact with the part, and cover with light dressing.

The natives often cure at once, by guessing where the center of the worm is situated, cutting down on it, and extracting both ends.

The external parasites of man comprise the louse, the itch insect, and the chigoe.

Of the louse, there are four kinds: that infesting the head, the crab louse on the pubis, the body louse, and the louse of the eyelash.

These are easily removed by cleanliness, shaving off the hair, and always by mercurial preparations; as white precipitate in powder, or mercurial ointment, well rubbed in.

The itch insect is cured by sulphur, which poisons it.

The chigoe is peculiar to warm climates; it penetrates the skin of the toe mostly, and lodges its eggs to the number of sixty. These eggs are hatched after a time, and cause much irritation and annoyance.

The eggs lie in a little bag, called a cyst; and this cyst must be extracted entire, for, if broken, an ulcerated sore forms, and proves very troublesome.

COLIC FROM LEAD.

The symptoms are those of ordinary colic, perhaps more violent; the whole belly is tense, and there are irregular knots or lumps from the contraction of the muscles; the spasm is so violent that even a clyster pipe can not be introduced, such is the spasmodic resistance; the restlessness is constant, and there is a frequent vomiting of an acid or onion-smelling matter, especially after taking food.

If no amendment be procured, the symptoms become violent, the costiveness obstinate, and a dangerous inflammation is set up in the bowels, which terminates in mortification.

Generally, the first attacks are recovered from, the constipation ceases, and ease follows, until after a longer or shorter period another attack ensues; though even first attacks may be followed by pains in the head and limbs, or by cramps, or even epilepsy and coma.

At last, after a certain number of attacks, the sufferer finds he has lost the use of one or both his hands; the wrists drop, and when the arms are stretched out, the hands hang dangling by their own weight, nor can the patient raise them by any effort of his will.

The affected muscles waste, especially those of the ball of the thumb. Recovery is still possible, but if the person continues to expose himself to the cause, the poison accumulates in the body, he becomes a cripple, falls into a bad habit of body, and dies.

A very peculiar mark of lead being in the system has, within the last few years, been discovered by Dr. Burton. It is a blue or purplish hue, running along the edges of the gums, where they meet the teeth. A knowledge of this fact, if lead turn out to be the only metal which produces this blue line, may be of practical use in various ways.

The coloring material is probably sulphuret of lead, or a similar salt, which is thus formed in the tartar or incrustation around the teeth. The tartar is porous, and admits into its substance fluids charged with animal matter, which would furnish sulphureted hydrogen, and this would form, with the lead present, a sulphuret, giving the characteristic; certain it is that the blue color existed wherever there was a tartareous incrustation of the teeth.

Treatment of Lead Colic.—The great object is to obtain action of the bowels; afterward, to treat the palsy, and prevent returns of colic.

Bleed, if the pulse be full, the pain in the belly be increased on pressure, and signs of fever are coming on.

Then the warm bath, and a lavement of warm water while in the bath.

Diligent frictions, with some stimulating liniment, or linen wrung out of hot turpentine may be laid on.

Give calomel, ten grains, and two of opium. Then a full dose of castor-oil; or, if castor-oil do not act, give an ounce of castor-oil and a drop or two of croton-oil added to it; and we may repeat this alternation of calomel and opium with the oils.

After free motions, recovery soon ensues.

Thus advises Dr. T. Watson, and the practice seems to be the best possible. But Dr. Gendrin, of Paris, cures with sulphuric acid, forty-four drops to a pint of water, and two or three pints are drank every day. It is sometimes vomited at first, but it is

retained in a few days. The pains diminish after the first, second, or third day, and as they diminish, the bowels act naturally. No other medicines are given; no lavements, nothing but a daily sulphur bath ordered. At the commencement, the sulphur in the bath combines with the lead in the body, and a black insoluble sulphate or sulphuret is formed on the skin; and this incrustation on the skin is so great that those who go into the bath with white skins come out with black, like negroes. The patients are to brush away this incrustation with a brush, and soft soap half a pound. These baths were repeated till the skin remained of the same color on coming out from, as on going into, the baths.

The preventive system is of importance with all who are exposed to the causes of lead-poisoning.

In the first place, the workmen should drink daily one or two glasses of the preceding sulphuric acid lemonade, and Mr. E. Benson gives to his workmen the following sulphuric beer instead of the lemonade:

No. 97. Treacle.....	15	pints.
Bruised ginger.....	$\frac{1}{2}$	lb.
Water.....	12	gals.
Yeast.....	1	quart.
Bicarbonate of soda.....	$1\frac{1}{2}$	oz.
Sulphuric acid.....	$1\frac{1}{2}$	oz. by weight.

Boil the ginger in two gallons of the water; then add the treacle and the remainder of the water, hot. When nearly cold, pour the whole into a cask, and add the yeast to ferment. The ferment nearly over, add the acid, previously diluted in eight times its weight of water; add the soda dissolved in one quart of water; close up the cask, and in four days all will be fit for use. This soon spoils.

Secondly, cleanliness, washing head, hands, face, etc., and bathing to keep the body clean; clothes of linen, not woolen, and they should be often washed—all clothes left in the workshop.

Thirdly, cleanse hands and lips before eating; and lastly, it would be well to guard the air-passages by mask or respirator.

VOMITING FROM SEA-SICKNESS.

Vomiting is a spinal act, and may be excited through the agency of several different nerves, as in the vomiting caused by irritating the fauces and palate.

Secondly, in that caused by an emetic, or by gall-stones, or by stones in the kidneys; and, thirdly, in the vomiting of early pregnancy.

In this state of sea-sickness the greatest relief is obtained by remaining perfectly quiet and motionless, in the recumbent posture, on deck, or exposed to the fresh air; and the best remedy is to take a small tea-spoonful of Cayenne pepper in some liquid sweetened. This directly restores animation, and causes the seemingly stagnant blood to circulate in its proper course.

CHOLERA

may be divided into English cholera, or mucous gastro enterite, and into malignant or Asiatic cholera.

English cholera commences with nausea, pain, and distension of the belly, with frequent vomiting and purging of bilious matter, which at last becomes mucous. Tongue furred, pulse frequent and small, thirst. Death is said to have taken place in twenty-four hours, with hiccup, cold sweats, cramps, and convulsions. The skin assumes a livid hue under great prostration.

Causes.—Heat, transitions of temperature; autumn; improper diet; certain fruits, as cucumbers, melons, etc.; irritant poisons, active or violent purgatives.

Treatment.—If this disease do not kill before the third or fourth day, recovery is to be expected; but the more violent the cramps, and the greater the prostration, the worse for the patient.

Soothe irritability of the stomach; opium is the sheet-anchor, indeed the only remedy. Give sixty to one hundred drops of tincture of opium; and nothing is to be taken into the stomach for half an hour afterward, in order that the medicine may not be rejected by vomiting.

A lavement of laudanum, forty drops in warm water. If the drops are thrown up, repeat thirty to forty drops every fifteen minutes until its influence on the system is fully obtained. A large mustard poultice over pit of stomach, or else reddening liniments; hot turpentine cloths may be applied; only the smell often provokes the vomiting.

The irritability may thus be quieted in sixty to eighty minutes; and Dr. Eberle says, if from six to eight grains of opium can be introduced and retained in the stomach for fifteen to twenty min-

utes, we may calculate with certainty on the speedy subsidence of the disease.

But if it be rejected by vomiting, we must apply it externally, thus : Mix two parts of nitric acid with one of water, and with this liquid wet a sponge, and apply it over the region of the stomach. As soon as pain is felt, wash the part with a solution of carbonate of potash. The cuticle may now be easily detached, so as to leave the underlying true skin exposed and raw. Upon this surface sprinkle from one to two grains of acetate or muriate of morphia, and cover with a piece of linen, on which simple cerate has been spread. In this way we combine counter-irritation and an anodyne, or soothing remedy.

Irritability being a little subdued, give calomel, one grain every three or four hours, to act on the liver ; but opium must be added if there is much vomiting.

For the cramps, rub with this :

No. 98. Soap liniment.....	8 oz.
Cyanuret of potash.....	20 grs.
Tincture of capsicum.....	1 or 2 oz.

The warm bath is useful.

If there is great prostration, give

No. 99. Sulphuric ether.....	1 oz.
Camphor.....	1 dr.

A tea-spoonful of this every half hour, until the cold, clammy sweats and the coldness of the body, of the legs especially, are giving way. Then give less frequently, until the scarcely perceptible pulse has at length become fuller and more indicative of power.

Mild mucilaginous fluids may be given warm, only observing the direction, after the first dose of opium.

So barley-water, freely given, will be serviceable.

After the attacks, animal broths, etc., and gentle tonics, as in convalescence from other complaints.

ASIATIC OR MALIGNANT CHOLERA.

Asiatic Cholera is a disease which, according to the best information we have, originated in August, 1817, at the city of Jessore, about eighty or one hundred miles north-east of Calcutta, and thence spread rapidly over the peninsula of India ; but did not,

however, leave that hot country for more temperate portions of the globe until the year 1829. It then advanced north, being most likely carried by a caravan to Orenburg, a city of Russia. Thence it followed the avenues of travel, until eventually it arrived in America, in June, 1832. This visitation began at Quebec, and thence rapidly spread over many parts of the United States—appeared at different points for two or three years, and then disappeared.

After a repose, or disappearance, for some years, this same disease again visited Europe, coming from the same part of the globe where it originated, and diffused itself over Europe, and again revisited the United States. It arrived in this country, at New Orleans, on the 8th of December, 1848, and about the same time at Staten Island, near New York; and on the 25th of that month, it was brought by a steamboat to Cincinnati. It soon visited other parts of the country, and eventually swept over a large portion of North America. About the close of the year 1855, it altogether disappeared, after having caused most dreadful mortalities at many points on this continent. It is evident, from these observations of the manner which this disease has hitherto swept over the earth, that we may again have to meet it, and that we may look for a revisitation within a short period.

The various degrees of intensity which accompany this dreadful malady, in different countries and climates, render it necessary to give our views of the proper methods of treatment which ought to be adopted should the United States again be the theater of its ravages. We will, therefore, consider it as we saw it in its visitations, beginning in 1832 and late in 1848, and the proper methods of treatment.

From the observations which the writer made during the two great invasions of the cholera, he came to the conclusion that the disease could be better understood by dividing it into four stages. First, the diarrheal; second, that in which vomiting and purging occurs; third, the stage of collapse, where there is a loss of pulse, and mostly a cessation of both purging and vomiting; the fourth stage, or that of reaction, which follows collapse, and which is characterized by the reestablishment of all the secretions.

During the first stage, diarrhea was not always present, though it was, without doubt, a general symptom. Where it did not occur, there was loss of appetite, noise in the head, giddiness, or pain of

the head; tongue slightly coated, with occasional cramps of the muscles of the feet or legs, and often pain in the loins. After all or some of these symptoms had continued during a few hours, or several days, they exploded into either the symptoms accompanying the second stage, or into dysentery—frequently the latter.

More frequently there was diarrhea, accompanied by a sense of numbness at the epigastrium or pit of the stomach, and the other symptoms above enumerated. These were generally, if not always, accompanied by a scanty secretion of urine. These symptoms continued often for days before rice-water evacuations made their appearance. We saw one collapsed case that had been preceded by many of the above symptoms, such as diarrhea, cramps—especially at night—loss of appetite, and depression of spirits, for a period of three months. This patient died from collapse.

It was often difficult to arrive at a correct diagnosis between common diarrhea and the first stage of cholera. Our own conclusions were based upon the following inquiries: 1. Had the patient been much exposed to cholera influence? 2. Were the evacuations lighter colored than in common diarrhea? 3. Were they more copious and debilitating? and, 4. Did they occur from any cause independent of diet and sudden exposure? If these interrogations were answered in the affirmative, we felt pretty certain that the patient had cholera in its premonitory form, and that it was liable to explode into the second stage at any moment. This stage of diarrhea was called by the quacks *cholérine*; and they often claimed the credit of curing cholera, when, in reality, their cases were nothing more than common irregularities of the bowels. We could point out not a few instances where persons were pronounced to have had cholera several times. A delicate lady told us that she had had the disease twice in 1850. She said she had no diarrhea, no cramps, no vomiting; but that she had no appetite, and was sometimes hot and sometimes cold. We asked what the doctor called her disease. "Oh!" said she, "he called it *dry cholera*, and said it was just as bad as any kind."

During the premonitory stage the pulse was more frequent than in health, with less force. The stroke of the heart was quicker, as well as more frequent than natural, and always showed decided evidence of debility.

In the second stage we generally found the following characteristics: The surface mostly cool or cold, though occasionally warm

and rather dry. When cool, moderate or free perspiration. The eyes were sunk deep in their sockets, and the whole face had a venous color, which was sometimes slightly observable in the premonitory stage. The venous hue, of course, varied in intensity. The ears, hands, and feet had less warmth than the general surface; the tongue was even cooler than these parts, and the breath below the natural temperature; great thirst; cramps of the extremities, but especially of the hands and feet. This symptom was much more frequent in adults than in children, for in them cramps but seldom appeared. Diarrhea, which had been in the first stage wanting, moderate, or suspended for hours, now burst forth into copious purging of that peculiar fluid resembling rice-water. This fluid, with flocculent or fleecy matter floating in it, was universal in subjects under the age of puberty, and generally in persons under forty years of age. In those over forty, and older, the evacuations assumed the appearance of dirty water, or soap-suds which had been much used. This was much more ominous of a fatal termination than the rice-water appearances. The periods between the evacuations were various. When these periods were short, we think there was less fluid discharged in a given time than when the evacuations were less frequent.

It was appalling to witness the depressing effects of large discharges from the bowels on the pulse. Sometimes it would become from comparative vigor, almost extinct, by a single action of the bowels. The discharges were sometimes involuntary, the least motion causing a stream of watery fluid to flow off; and even when the patient was perfectly quiet, they would occasionally pass away.

During this stage the hands were often of a blanched and corrugated appearance; but if vomiting took place at all, this symptom was not always present. When present, the food previously taken, frequently some hours before vomiting set in, was first thrown off in an undigested state. After these emissions but little in general was vomited but drinks, and the peculiar liquid similar to or identical with the dejections. We frequently observed that vomiting, even more powerfully than purging, reduced the force of the heart and arteries, and, of course, had the effect of hurrying the patient more rapidly into the stage of collapse. We have repeatedly kept a finger on an artery during vomiting, and felt it growing weaker, until it became imperceptible before the vomiting had ceased.

Collapse.—The third stage, or that of collapse, was characterized by hoarseness and a totally altered state of the voice, it becoming sometimes almost inaudible. The pulse persisted much longer, in bad cases, at the wrist, in the old than in the young. At the temples it generally became imperceptible as early as at the wrist; indeed, in the old we think it sooner disappeared at the former than the latter point. The great arteries of the neck could be felt, in general, until very near the last. We saw one case, however, where they could not be felt for six hours before death. It was common, when this stage set in, for both purging and vomiting to cease; occasionally, however, both these symptoms continued, vomiting more frequently than purging—this often from too much medication. Blindness was an occasional symptom, and the eyes were sometimes bloodshot. This last symptom is one of the most unfavorable that can occur. Patients during this, as well as the fourth stage, toss from side to side, sometimes for days. Another symptom was the total suppression of urine. This often occurred in the latter part of the second stage, and even throughout the whole course. When the patient occasionally passed urine during the second stage, there was a strong probability that reaction and ultimate recovery would eventually take place without the occurrence of collapse.

Fourth stage.—This stage is the one which terminates the worst cases of collapse when they do not terminate fatally, and begins so soon as the pulse in a collapsed patient can be felt at the wrist and temples; also with the beginning of warmth of the surface. It is in this stage that the re-establishment of the circulation is brought about, that the liver is again thrown into its normal action, and that the kidneys perform their healthy functions. The skin now resumes its healthy action; and now the patient may, in general, be considered convalescent; but often only one or two of these secretions occur, and then the patient has to succumb.

Treatment—First stage.—When a patient said to us that he had no diarrhea, but otherwise had symptoms of cholera, such as cramps, slight nausea, etc., we were much in the habit of giving one grain of opium and five of calomel, at bed-time, and directing that if the calomel did not purge by morning, a small dose of castor-oil or rhubarb should be given. After the bowels were evacuated, we directed a blue pill of five grains every night, or every other night, for a short time; a fourth of a grain, or even half a grain

of opium was given with each. So soon as the irritation of the stomach and bowels was quieted by this course, a table-spoonful of compound tincture of bark was directed, three times a day; or, more frequently, one table-spoonful of brandy after each meal. The dose of these remedies was, of course, to be increased or lessened, owing to the age of the patient, the circumstances of the case, etc. To these means were often added a warm or cold bath, once a day, either by shower or sponging. If convenience allowed, a plunge bath was directed. The patient was ordered to avoid all places of public resort, excepting church once a week, as well as undue excitement of every kind, and, above all, the exposure to the direct rays of the sun. All meetings held in basements were to be especially avoided; and the sleeping chamber to be freely ventilated, indeed, never closed, unless to keep out rain, or the heating rays of the sun; and as few persons to occupy his bedroom as convenience would permit.

Where diarrhea existed, or afterward supervened, the patient was directed to take about two grains of calomel, with half a grain of opium, every two or four hours, according to circumstances, until the bowels should feel comfortable. If opium was found to disagree, camphor, in equal portions with the calomel, was given.

Small portions of morphine, in twelfth-grain doses, were given with the camphor and calomel; and if there seemed little danger of exciting sickness of the stomach, the fourth of a grain of ipecacuanha was added. We occasionally directed pills, with a fourth of a grain of opium and the same amount of ipecacuanha, and one grain of calomel, which, in mild cases, were directed to be taken every hour or two. This amount of calomel might, with propriety, be reduced to half a grain, and the opium and ipecacuanha be increased to the same quantity. If the skin was found dry and warm during this stage, all the ipecacuanha that could be borne without the risk of vomiting, was given.

In all the stages of premonition, the oil of turpentine was used every few hours as a liniment, on the abdomen, mostly, but often on the back and extremities. Occasionally baths of mustard and water, were ordered for the feet and hands.

The food was crackers, and tea or coffee in small quantities; and the fleshy parts of beef or mutton were allowed. Rice was a good deal insisted upon as a diet; lemon-juice was admitted in the drinks in any quantity desired. When the patient was able to

move about, summer fruits, such as strawberries, raspberries, and blackberries were admitted.

There is a curious fact connected with recovery from the diarrheal stage of cholera. It is this: that where diarrhea is checked during this stage, it is more difficult to get clear of the effects of the disease than where reaction did not occur until after the second or third stage. Where this did take place in the second or third stage, the patient would completely convalesce, in general, in a few days.*

Second Stage.—In the treatment of the second stage, we gave five grains of calomel and half a grain of opium every ten minutes, until our patient had taken twenty grains of the former and two of the latter. With each dose of the medicine was given one tea-spoonful of brandy, with small quantities of iced water, to wash it down. If the case seemed urgent, we gave fifteen drops of laudanum with each dose, for two or three times, in addition to the opium, and calomel. Often, in female cases, the opiate was given in little more than half the quantity, and two or three grains of calomel were given instead of five. We preferred to give the calomel in freshly-made pills, as being more likely to reach the stomach, and be retained there, than when given in powder.

If, during this time, there were cramps of the muscles of the extremities, or of the abdomen, mustard plasters were directed to those points, but in all cases the abdomen was occasionally oiled with turpentine. Not unfrequently flannels were moistened with the oil (or spirits) of turpentine, and applied to that region so long as they could be comfortably borne. Very gentle rubbing was directed, with soft flannel or the hand, but no severe friction was admitted. When the cramps were severe, they were mitigated by holding the limb firmly, so as to compress the muscles. The patient was directed not to raise his head, but to keep in a horizontal position all the time, as fainting might result in death.

At the end of the first forty minutes, if there was no abatement of the purging or vomiting, and if there was no urine, or but little, discharged, three grains of calomel, with the twentieth of a grain of opium, were directed, every ten minutes, until twenty

*It will be observed by the reader that this article is written in the past tense, because we describe it as we saw it and treated it, in Cincinnati, during 1849-50, and as we saw it in 1832.

doses had been taken, or a mitigation of the symptoms had taken place. If, after the twenty doses had been taken, and reaction had not occurred, and the rice-water discharges continued, we persevered in the use of calomel and brandy—the former in two-grain doses every ten or fifteen minutes, the latter in tea-spoonful or even less doses, with iced water. This course was continued until either collapse or reaction supervened.

One of these generally occurred by the time that eighty grains of calomel and two or three grains of opium had been given. In some instances, but one grain of calomel was directed every ten or fifteen minutes, and that without opium; for we seldom gave more, as has been said, than from two to four grains of opium in the treatment of any one case. In female cases, we generally preferred sulphate of morphia to opium, as we thought it had a less deleterious effect on the brain.

To allay thirst, small pieces of ice were directed to be held in the mouth as often as the patient wished. Iced water or cold lemonade was given in small quantities, and vinegar and water were admitted as drink. The almost total abandonment of acid, fruits, and vegetables in those days, so far from warding off attacks of the disease, was, in our opinion, often injurious, and seemed of itself to indicate the use of vegetable acids. The repeated chemical analyses of the excretions of cholera patients, by C. H. Raymond, failed to detect the presence of any acid, and seemed to point more strongly to that mode of treatment.

So soon as the symptoms indicated the termination in reaction, the medicine was withdrawn. The rice-water purging being arrested, and a more healthy action of the heart and arteries established, the patient was allowed a rest of from six to twenty-four hours. The calomel already taken generally acted as a cathartic within the above limits, or, at the farthest, within two days. We found, to give purgatives was unnecessary in general, and unsafe, because, when purging was brought on by these, great debility occurred, and was, in some cases, the forerunner of death. Injections of salt and water, given every few hours, were almost always sufficient to bring about an open state of the bowels. Brandy was continued until the pulse rose and the natural warmth had become generally diffused. In many cases, in females and in the temperate, no medicine was used beside calomel and opium, or morphine.

An occasional symptom, common to both the second and third

stages of the malady, is a claret color of both what is purged and vomited. We saw two cases of this kind. One was in an old man, in whose case the evacuations became of a claret or slightly bloody color during collapse; he died. The other case occurred in the practice of the late Doctor Foster Carroll. The patient, when first seen, was on the confines of collapse, purging and vomiting claret-colored fluid. The case was treated with calomel, and very small doses of opium. Of the latter, not more than one grain was administered, and of the former, one grain, with a little brandy and water, was given every five or ten minutes. This patient did not collapse, and recovered within a few days, reaction having taken place some twelve or fifteen hours after he was first seen by the doctor.

Third Stage.—We come now to the treatment of the stage of collapse, where death but too often triumphs over nature and the best-directed efforts of the physician. In no human malady do we feel so much trepidation as we do in the worst forms of Asiatic cholera, for in most other diseases we have time for deliberation, or can at least see, with tolerable certainty, the probable result. We meet an individual in the street, or on the road, in apparent health, and converse with him. In an hour or two we are summoned to his bedside, and find that in that time he has sickened, and is already sinking into collapse. His tongue and breath are cold, his limbs cold and shrunken, the skin discolored, and the whole surface bathed in clammy perspiration. The eyes are deeply sunken and dull, the vision is indistinct, and sometimes lost for minutes or hours, the pulse is no longer felt at the wrist or temples, and there is no secretion of bile or urine; the voice is hollow or lost, and always hoarse when it exists. The patient tosses from side to side, and passes rice-water discharges, perhaps involuntarily; his limbs are racked with cramps, and he who but an hour or two since rejoiced in the buoyancy of active manhood, seems now only to claim relief from suffering by death, which but too often follows.

The whole affair has been so sudden that all but the medical adviser are thrown into confusion, and he, too, often partakes of the general alarm, and to that extent is disqualified for rendering the needed medical assistance. He considers that all that can be done must be effected within a very brief period, and directs perhaps more than can be useful, forgetting sometimes the powers of

the stomach. He does not reflect that this organ is not a steam-boiler, and that heat can not be restored by irritation where disease has so suddenly prostrated the powers of life.

• The question now is how to arrest the rapid tendency to dissolution. We have seen that much of the fluids of the system have been carried away in a serous and alkalescent condition, and the system has shrunk, within a short time, from its usual fullness to a state of great emaciation. The pulse is now only felt in the great arteries of the neck, yet the patient still breathes; and vomiting and purging have ceased, if not kept up by improper medication. The whole circulation which now sustains life is confined to the brain, chest, and abdomen.

What now will be the effect, if, after the patient has lost twelve or fifteen pounds of fluid, and the remainder is confined to the great centers of the body, you attempt to diffuse suddenly this quantity, already too small, throughout the general system? The answer is clear—death, in nearly every case. The heart is already feeble, contracting on a small amount of fluid only sufficient to keep up its pulsations; and the brain, too, has barely an adequate quantity to prevent fatal congestion. Withdraw this, and death must be the inevitable consequence. We saw, in 1849, several cases resulting fatally from the use of external heat. One of these was a young man, or boy, about fifteen or sixteen years of age, who was brought into the First Ward Hospital, Cincinnati, and had collapsed twenty-four hours before we saw him. His physician and nurse thought he must die. He was placed on a straw bed and nursed carefully, but scarcely any medicine had been given him, and he was very lightly covered. He threw himself much about, and was often nearly naked. Another patient, two or three years younger, had been brought in before our visit. This patient was still only in the second stage. The house physician had ordered unslacked lime, in a moistened state, to be applied to his cold limbs. The warmth thus produced had reëstablished the almost extinct circulation, and he was thought to be doing well. The stroke of the heart was very feeble. We heaved a sigh as we turned from him, believing that premature reaction had been brought about by external heat. We examined the other patient, advised a little brandy to be given occasionally, and felt that he would yet recover. On the following day this patient was better; the other was dead. The result, in both of these cases, in our

opinion, amounts to almost positive demonstration of the truth of our position.

When we were called to a patient who was either in a collapsed state or rapidly running into it, we pursued the following course: In the first place, we directed that all the windows in the chamber should be opened; that the attendants should be few; that they should strictly follow directions, and should do as little to discourage the patient as possible; that friction should only be applied when there were cramps, and, even then, that it should be moderate. It was directed that the body should be covered with flannel, or a light blanket or two, or only to an amount that was comfortable to himself; that the discharges from the bowels or stomach should be immediately removed; that the abdomen should have turpentine applications constantly applied; and that mustard poultices should be used, as in the second stage. Drinks should be given in small quantities, and should consist, as before, of iced water or lemonade, unless the patient should desire some other drink. Small pieces of ice were allowed to be held in the mouth.

No heating substances were applied externally, for a period ranging from six to ten hours after the collapse had been ushered in. It was then directed that gentle heat, by means of hot water in bottles, or other warm substances, should be applied, for the purpose of gradually increasing the temperature of the system, or rather of the extremities. When the weather was cool, fire was kept in the chamber, at the same time that currents of fresh air were admitted from without.

When we had not seen the patient before the beginning of collapse, we gave, as in the second stage, five grains of calomel and half a grain of opium, every ten minutes, until four doses had been taken. We then gave three grains of calomel and the twentieth of a grain of opium, at the same periods, until the vomiting or purging had ceased, or until sixty more grains of calomel had been taken. Each dose was washed down with a tea-spoonful of brandy and a little iced water. If the vomiting and purging continued, we directed two grains of calomel and one-sixtieth of a grain of opium, until thirty doses had been taken. If now the purging continued, with light-colored evacuations and no flow of urine, half a grain of calomel was directed, every twenty minutes, until either death or reaction occurred.

In the mean time, brandy and water were continued, as before stated. The object was to give an ounce of brandy every hour. Where the patient had been in the habit of using spirits, the quantity was graduated to suit those habits. This course had often to be continued twenty-four, thirty-six, or forty-eight hours. The quantity of brandy was often lessened after the first twenty-four hours, sometimes sooner; and as soon as warmth was generally diffused, stimulants were withdrawn. Whisky may be used instead of brandy, if good.

In the treatment of children at the breast, half a grain of calomel was directed every ten minutes, until death or reaction occurred. With each dose of calomel the hundredth part of a grain of opium was combined, and, in a few cases, more than this of the latter, though we now doubt the propriety of so doing. Ten drops of brandy, in iced water, were directed with each dose of medicine. In older children, these doses were increased according to the age.

We now come to speak of the results of this plan of treatment. Only twenty-nine cases were collapsed, during 1849, in our hands. Many cases were arrested in their progress before the collapsed condition took place. Of the twenty-nine cases of collapse, nineteen went through it successfully into the fourth stage, or that of reaction. Of these seven died, and twelve completely recovered. We now proceed to describe a few of these cases. It is, however, proper to say, that of the cases of collapse which were treated in 1850 by us, a smaller number recovered than in the former year. There was more redness of the eye, and the collapse was more intense, the skin darker, and the breathing worse. We carried some, however, successfully through this stage in that year. It should be recollected that the summer of 1850 was considerably warmer than that of 1849; and to this cause we attributed the intensity of the collapsed cases.

We shall, before concluding our relation of the course pursued in the treatment of this disease in 1849 and 1850, describe the treatment of a few cases, to show that no case can be so desperate that it ought to be abandoned, and to show that patients can and must be lost after our best efforts have been used:

Mr. Church, aged fifty, was very much exhausted from his attendance on a sick and dying family; took diarrhea, which he totally neglected for some days, when he was hurried into the stage of collapse, which became profound a few minutes after we

first saw him. The face was unusually blue, tongue very cold, hands and feet much shriveled, and very cold, voice nearly gone, heart irregular in its action, and breathing difficult. We took our usual course, but in a more determined manner. The calomel was given in large doses, and the brandy directed more freely; but the patient sunk steadily, and died in about ten hours. The evacuations in this case were unusually large; he vomited considerably; he suffered from cramps, and the skin acted more freely than was common. There were but feeble efforts at reaction, and medicine had no effect.

Miss A., aged twenty-six, was taken June 15, 1849. She had had diarrhea for three days; but much of this time had attended to her household duties. Some hours before we saw her, she fell into the second stage; and when we first visited her, she was in a profound collapse. In this state she remained eighteen hours, having, during this time, neither pulse at the wrist or temples. The evacuations were as clear as thin starch, having a slightly flocculent appearance. She passed no urine during a period of seventy-two hours; it did not flow for eighteen hours after reaction, and we presume she had really passed none for many hours before we saw her. At several times she lost the power of vision. This was especially the case four hours before reaction set in, when she was blind for some time, probably more than thirty minutes.

In this case the course before laid down was rigidly pursued, with this exception, that she took but one and a half grains of opium during the whole time. Two hundred grains of calomel were taken, and brandy was administered pretty freely; for we suspected that she had been in the habit of *taking a little* when well. This patient recovered without being in the least salivated. The pulse rose, the heat became diffused, the dejections ceased, and the restlessness gradually wore away as the skin assumed its healthy functions.

The following cases occurred at the Cincinnati Orphan Asylum, in 1849, of which we were then physician. There were but four well-marked cases of collapse in that institution during that year.

We had given the most positive direction that if severe vomiting or purging should occur during our absence, half a grain of calomel and one-thirtieth of a grain of opium should be given every ten minutes, until we could see the patient. We had pow-

ders of that size for the purpose ; but our directions were not followed in the first two cases, and they both died—the first on the 5th of August, an hour after our first visit ; the second lived only ten minutes after we saw it.

The next case that occurred was treated in the manner above directed, the powders being washed down by twenty drops of brandy and a little water. The patient was three or four years old, and took twenty powders. This was dosing pretty largely in the way of opium. The collapse continued eight hours, when it yielded to reaction ; and within a few days the fever, on the establishment of a healthy action of the kidneys and skin, disappeared.

Very soon after another case occurred, and the same plan of treatment was pursued as in the last case ; but, we believe, only twelve of the powders were given before reaction supervened ; but when purging came on, the evacuations, instead of a dark color, showed but little evidence of bile. At the end of a week, this patient collapsed again. We directed the same powders, until twenty of them should be taken. Reaction now took place. The evacuations became dark, and the patient completely recovered.

Mr. Erickson, a delicate man, aged twenty-eight, was taken July 17, 1849. An empiric was called at 10 o'clock in the morning, who gave him heating medicine, and adopted the following course : Half a table-spoonful of black pepper, and the same amount of common salt, with half a tea-spoonful of vinegar, to be taken hot as possible, and repeated every ten minutes until four doses should be taken. This brought on vomiting, which it could not, indeed, help doing. He, however, appeared better part of the day and night. The diarrhea still persisted, and in the afternoon of the second day he took ten more doses of the medicine at the same intervals. The consequence was a recurrence of the vomiting, which had the effect of relieving him of the poison nearly as soon as it was taken.

At the close of this medication, he had become quite cold. Heating applications were now applied, but on the third day the patient had become collapsed. Various things were now given him. The tincture of prickly-ash bark was administered, in table-spoonful doses, for some time ; and frictions of cayenne pepper and brandy were used. Although the patient was now as cold as marble, ice was constantly kept to his head, and continued through the ensuing night. During all this time, infusion of logwood was

given as an injection, we know not at what intervals. Other things were added, and a tea-spoonful of laudanum at one time.

The leading eclectic of the tribe was called, and justified what had been done, and said that the patient must die. One of the attending quacks said that he had given him enough to kill ten men. This was true, if the stomach had retained what had been given him.

We were called to this patient on the morning of the 20th, or at the end of three days from the time the empirics began their medication. He had then been in a profound collapse for sixteen hours; the ice was yet on his head, and the pepper and brandy were being applied to his person. He was very restless, tossing himself from side to side, which produced great prostration. The breathing was very laborious, and the heart much affected by the exertion. There was no vomiting, no purging, no pulse, and no discharges of urine. The breath and tongue were as cold to the touch as the surface of the body. There were occasional cramps, combined with the other symptoms. Under these circumstances, we began the treatment. One thing had been done by a friend of ours, during the preceding night, which was no doubt of much use in preserving life; that was, the administration, every few minutes, of a little brandy and water, which was, fortunately, not rejected. We continued the brandy and water, in tea-spoonful doses, every ten minutes; that is, one tea-spoonful of brandy with about two of water were given. One grain of calomel, with the twentieth of a grain of opium, was directed, every thirty minutes. We could see but little advantage in giving, at this advanced stage, more of either of these remedies. The object in giving the opium was to obtain the stimulant effect, and it was expected that the calomel would excite the liver, kidneys, and skin to the healthy action, which is always necessary to recovery.

The frictions had been so constant and severe, with various irritating applications, that much of the skin was partially abraded. This condition of the dermoid surface forbade all further exertion in that way. The extremities were simply covered with soft flannel, which was kept on with care. At 8 o'clock P. M., we could feel a little warmth about the neck, shoulders, and temples, and a feeble pulsation of the temporal arteries could be felt. On the morning of the 21st, the arteries could be felt at the wrist. The

arterial action was more perceptible on the 22d, and on the 23d the reaction was general. On this day purging occurred both copious and dark; and in the evening urine was passed in small quantities. No purgative medicine was given, but one or two injections of salt and water were directed. Brandy was given, in small quantities, throughout the collapse and reaction, but only at long intervals toward the last. There was salivation in this case for the first time with us. After the recovery, this patient enjoyed much better health than he had done for a long time.

The next collapsed case which we treated was of a man fifty years of age. He was seventy-two hours without pulse; still he recovered. But space will not allow the further relation of cases. We must, therefore, close this part of the subject.

The foregoing has been drawn from what the writer experienced during the invasion of the cholera in 1832, and again from 1849 to 1854 or '55. He believes he can not give a better description of the disease than what he published in 1854. He has, therefore, drawn largely from what he then said. Many object to the use of mercurials in the treatment of cholera, but the writer thinks that, when properly combined with other remedial agents, it has done more in saving patients in this dreadful malady than all other medicines put together.

The empiric has always been in the habit of abusing powerful medicines, because he knows he can best succeed by such a course. It is asked by physicians, sometimes, How can mercurials do good in a disease which requires such sudden medication? It can only be replied, that if it does not at once benefit, it is ready to excite the action of the liver, kidneys, and skin into healthy action. It can, however, scarcely be doubted that the combinations of opium and calomel have a better effect than either alone. The combinations also of blue pills with camphor, or other anodynes, are often of great use in diseases of a choleraic nature.

The writer wishes to direct the attention of the reader to a plan of treatment which has been successful in India, and in England too. This method is recommended by Mr. C. A. Chavasse, of Smithwich, Birmingham. This surgeon had a very extensive experience in the treatment of Asiatic cholera, both at home and abroad. He says: "I have seen every plan tried—counter-irritation, brandy and laudanum, brandy and capsicum, cold affusion, transfusion; Stephens's saline with soda, and chloride of sodium,

and chloride of potash; the Australian sulphuric plan, mustard emetics, and calomel and opium and astringents, etc.—all with some degree of success, but all inferior to the plan I am about to recommend, and which I first saw put in practice in India, on a very large scale. I have seen many hundred cases treated with success by it. About one was lost in every eight.

“The plan is as follows:

“Warm turpentine epithems (embrocations), or mustard poultices, applied to the abdomen frequently. Take calomel, prepared chalk, of each ten grains; make a powder, to be taken in molasses every hour, with half an ounce of the following mixture: Take of the compound powder of chalk, with opium, powdered gum arabic, white sugar, of each two drachms; sesquicarbonate of ammonia, one drachm and a half; cajeput oil, twenty minims; tincture catechu, three drachms; camphor mixture, eight ounces. Mix.

“The above to be given until the evacuations become feculent; and then the following substitute, until the purging be quite stopped. Take of acetate of lead (sugar of lead), half a drachm; strong acetic acid, Bentley’s sedative solution of opium, fourteen minims; oil of cinnamon, four minims; tincture of ginger, three drachms; infusion quassia, eight ounces. Mix. An ounce to be given every two hours. Afterward, decoction of bark, with dilute sulphuric acid, may be given.

“The strength must be supported by giving, alternately, strong beef tea, spiced with pepper-corns, and seasoned with salt and arrow-root, and with milk, with brandy and nutmeg, between each dose of medicine. Cold water may be allowed, *ad libitum*. Flannel should be worn next the skin.”

There will be a necessity, in country places, for dispensing with some of these articles; but the leading ones can be generally obtained.

The powders can be kept ready for use; so can the second prescription; and, in the case of the appearance of cholera symptoms, can be given by the friends of the patient until a physician can arrive.

It is, however, the opinion of the writer, that an equally safe plan of treatment may be found in the following course, which is, that the following medication should be adopted. First, when the patient shows evidence of cholera, he should take one of the following pills:

No. 100. Calomel.....	24 gr.
Sulphate of morphia.....	3 gr.
Pulverized gum acacia.....	$\frac{1}{2}$ dr.
Mix.	

Make into twelve pills, or the same number of powders. One of the pills or powders may be taken every half hour, until the vomiting or purging stops, taking care not to give more than four doses within the first hour and a half, and then a dose may be given every four hours, if necessary. It is a good plan to direct one portion after each action of the bowels. The powders divided into two, or the pills made half the strength, would, in general, be strong enough in mild cases. Brandy may be given, in moderate quantities, between the doses of the medicine.

In addition to this, we may say that we have seen much good derived from the following mixture :

No. 101. Chloroform.....	1 dr.
Laudanum.....	2 dr.
Tincture of camphor.....	$\frac{1}{2}$ oz.
Brandy.....	5 oz.

Of this a table-spoonful may be taken frequently, with double the amount of water, until the vomiting and diarrhea, or both, shall be stopped. If this last prescription be relied on, two grains of calomel should be administered every few hours, until three or four doses are taken, or the evacuations from the bowels become dark-colored, and then stopped. All medicine must be discontinued as soon as the patient is relieved.

Prevention.—During the time that the cholera rages in any locality, the inhabitants living in it should stay at home as much as convenience will allow, and live in the usual way. All extremes should be avoided. A table-spoonful of brandy might be taken, after each meal, with propriety. Flannel should be worn next the skin. All should use the plunge, shower, or sponge bath, once a day, when the health will permit. When cold water disagrees, warm salt and water may be used instead. The usual avocations should be, in general, pursued. Places of worship should only be attended once a week, and that only during the daytime; and if a sense of religious duty does not forbid, should be dispensed with for a few weeks. Schools should be dismissed during the prevalence of cholera in any neighborhood.

LOOSENESS OF BOWELS, OR DIARRHEA.

Frequent and copious discharges of foul matter by stool, accompanied by griping, and sometimes by vomiting, characterize this disease; but there is neither fever, nor inflammation, nor contagion.

Emaciation follows long-standing cases.

Treatment.—If the motions are frequent, and accompanied with bearing down, give an ounce of castor-oil, with fifteen to thirty drops of tincture of opium; but if the discharge from the bowels be abundant, give twenty grains of compound chalk powder, with opium, three times a day, allowing gruel, arrow-root, or sago, and forbidding all solid matter.

But if the disease do not yield, the mercury, with chalk powder, one or two grains, should be added to each dose of the chalk powder; or we may give Dover's powder, four or five grains, with the mercury and chalk.

When the belly feels tender on pressure, calomel and opium, one grain of calomel and five of Dover's powder, thrice daily, with hot turpentine applications, or a blister to the belly. Various astringents are given.

No. 102. Aromatic confection	1 dr.
Tincture of catechu	1 oz.
Chalk mixture	6 oz.
Ginger syrup	$\frac{1}{2}$ oz.
Tincture of opium	30 drops.

Two or three table-spoonfuls after each liquid.

Tincture of kino may be substituted for the tincture of catechu.

Dr. Elliotson strongly recommends this:

No. 103. Sulphate of copper	$\frac{1}{2}$ gr.
Powdered opium	1 gr.

To be given thrice daily.

To prevent attacks, avoid wet and cold feet, intemperance, and all improper articles of diet.

DIABETES

is divided into three species—one with limpid urine, not sweet; a second with urine of the smell, taste, and color of honey; in the third, the urine contains chyle.

The symptoms of the first kind are white tongue, indigestion, dry skin, debility and depression, constipation, gnawing at the pit

of the stomach; frequent desire to make water; urine itself is greatly increased, amounting, in some cases, to forty pints daily, when the natural average is about forty ounces, or an imperial pint and a half.

The specific gravity of the urine, in health, is from 10.15 to 10.25; in diabetic urine it averages 10.40, and ranges from 10.25 to 10.50.

Causes.—Excessive use of liquids—of spirituous liquors; a fit of hysterics causes undue secretion of the urine—any irritation, local or general.

Treatment.—Abstain from drinking; take animal food; encourage perspiration by a warm bath—by Dover's powder, five to eight grains, two or three times a day.

Tonics or strengthening medicines, as muriatic or nitric acid, with opium, should be given.

The honey urine diabetes is a very serious and mostly unmanageable complaint. The patient's attention is first directed either to the quantity of water he voids, or to some shining spots on his boots, or on the ground, whenever a drop of his urine happens to have fallen, on which spots the flies are observed to settle. The urine is of a pale straw color, smelling like hay—tasting sweet, and containing sugar. There is constipation, white tongue, thirst, indigestion; gums red and tender; throat dry, appetite inordinate; the breath has sometimes an odor like that of hay. The patient becomes thinner, weaker, more irritable, and desponding; he becomes melancholy and anxious.

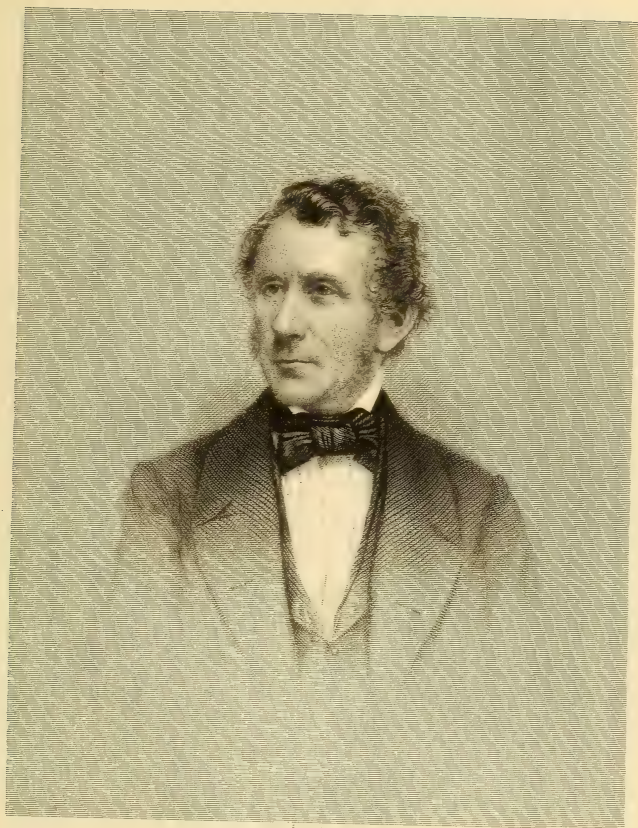
The disease may continue for months, or even years, until the patient dies exceedingly emaciated and exhausted.

Carbuncles often accompany diabetes.

Few people recover from an attack of this disease; and the cure, if cure do take place, is always tedious and difficult. Dr. Eberle saw but one case of recovery out of six which were under his care.

The causes are obscure; there would seem to be an hereditary tendency.

Treatment.—Three indications of treatment—first, to restore the defective power of the digestive apparatus; secondly, to cut off, or restrict as much as possible, the supply of saccharine or sugary matter from without; and, thirdly, to mitigate or remove distressing symptoms.



Wm. H. Woodcut

very respectfully
Yours
J. A. Drake

As the very essence of the disease is placed in the digestive system, we should be able to cure the disease at once if we could procure a natural state of the digestion.

We must, therefore, prevent any facility for adding to the sugar already in the system, by excluding every article of diet which is either saccharine in itself, or may be converted into saccharine matter. Animal food furnishes but scanty material for the formation of sugar; accordingly, Dr. Rollo, some fifty years ago, discovered that a diet consisting exclusively of animal matter had a most extraordinary influence in reducing the quantity, and in lessening the sweetness of the urine in this disorder.

Could patients live long without eating any thing but exclusively animal food, it would be well; but none can long endure to do so; and then, with the slightest relaxation in diet, back would come the sugar in the urine, and suddenly the urine would be increased in quantity.

The animal diet may be varied; and all kinds of meat, game, poultry, and eggs, may be eaten freely, but without any vegetable matter.

If vegetables must be permitted, green garden stuff, such as spinach, celery, cabbage, and the like, may be taken with less risk of increasing the sugar in the urine than potatoes and those vegetables which contain a proportion of sugar or of starch.

When the patient will not be ruled as to diet, and indulges without restraint, the disease advances with rapidity, and is soon fatal; but, with care, life may continue for several years. Neither are medicines useless; for they may prevent more mischief than would otherwise exist, and they may decidedly control the diseased action going on.

The drain upon the powers of the body, caused by the common discharge, is the origin of the emaciation and hectic; and if some portion of the food were not taken up and employed in the process of nutrition, a fatal event would soon take place, and our object should be to increase the quantity of food, which is supporting the strength. A judicious system of diet is to be recommended, one that will least increase the saccharine matter in the blood and urine. Fruits are bad. Bread, if it must be eaten, should be stale and well fermented, and there is a bread made for diabetics, called gluten bread. The meals must be moderate; great eating would be dangerous. Drinks to be limited, and con-

sist of tepid animal broths or distilled water. If the patient have been used to much drink, diminish it gradually.

Cupping or leeching is sometimes useful.

Opium is a powerful drug here. It quiets irritation and checks the discharge, although it will not prevent the formation of the sugar. Dover's powder contains opium; give five grains of it thrice daily. If the ipecacuanha in this Dover's powder disagree, by causing or increasing vomiting, then give opium alone, half a grain in pill. Then hot-air bath, warm clothing, flannel, skin rubbing, are beneficial.

Creosote, one drop, with gum arabic; mucilage, one drachm; and water, one ounce, three times a day; or it may be given in pills, Professor Berndt cured a case by eight drops, daily, of creosote.

Mercurials are to be avoided.

Aperients may be used when necessary.

Dr. Clay tells us of three cases cured by the following mixture, and no relapse followed:

No. 104. Tincture of muriated iron.....	2 drs.
Sulphate of quinine.....	8 grs.
Tincture of opium.....	90 drops.
Distilled water.....	6 oz.

Of this, two table-spoonfuls, every four hours, were given.

The permanganate of potash, two or three grains thrice daily, has cured.

But there is a long list of remedies which have been narrated as infallible, yet have never stood the test of a fair trial.

Sugar in urine occurs in that of man alone, and of no other animal.

Dr. Percy recommends the following as a substitute for bread. Take the woody matter of sixteen pounds of potatoes, *washed free from starch*; three-quarters of a pound of mutton suet; half a pound of fresh butter; twelve eggs; half an ounce of carbonate of soda, and two ounces of dilute muriatic (hydrochloric) acid.

Divide this quantity into eight cakes, and bake in a quick oven till nicely browned.

MILKY or CHYLOUS URINE is a rare disease. The urine is of a milky appearance, and coagulates into a jelly-like substance, which separates into a white clot and a clear yellowish fluid; or a white flaky matter is deposited; or a white cream arises to the surface.

This disorder may be partially relieved by blood-letting, spare living, sweating medicines, laxatives, and opiates; there is no cure.

ATROPHY, OR MESENTERIC DISEASES. (See DISEASES OF
CHILDREN.)

CONSUMPTION.

This fatal disease begins in various ways, and often fails to attract attention till the malady is far advanced.

Sometimes it appears after a common cold or catarrh, when the cough continues troublesome, long after the other symptoms have disappeared; or it may follow other diseases; or it may set in with merely a short dry cough, occurring on rising in the morning, and so slight that attention is not attracted to it.

The earlier symptoms will be weakness and languor, with a disinclination for any exertion; there is more or less of difficulty of breathing, or rather shortness of breath; want of appetite; some thirst, and a pulse either habitually too quick, or else too easily accelerated.

Then the patient expectorates or "raises" a little, and a little blood appears in the expectorated matter.

After a time these symptoms become more and more troublesome, and perhaps a considerable quantity of blood is thrown up by coughing; then the mucus thrown up begins to change its character, becoming thicker, and mixed up with little round masses of a peculiar matter, wrapped up in the mucus, or free from it; these masses, on agitation with a stick in water, will sink to the bottom; there is often a hoarse voice as a very early symptom; and now hectic fever sets in.

HECTIC FEVER

is a remittent fever, arising from local irritation in weakened habits of body.

Its symptoms are chills, then flushings of face, a hot skin and frequent pulse, to which perspiration succeeds, forming a paroxysm of hectic fever.

Two such paroxysms occur every twenty-four hours—the first usually about noon, which abates in four or five hours; but it is

soon succeeded by the more violent paroxysm, which does not terminate until 2 o'clock in the morning, when sweating puts an end to it.

The usual febrile symptoms mark this fever; the pulse ranges from 98 or 100 to 130, but always remains too quick; the urine is high colored, with sediment; but the cheeks are flushed, and there is a florid, circumscribed redness; there is also a sense of burning heat in the palms of the hands and soles of the feet.

The patient rapidly loses flesh; the appetite falls off; sweats, which seem to melt away the strength, are checked only to be followed by exhausting diarrhea; when at length the respiration becomes very difficult, and death releases from suffering.

The treatment of hectic varies with that of the disease of which it is an accompaniment.

The expectoration is at first of mucus; then little points of matter, like softened cheese, are seen, which sink in water; sometimes the expectoration is more or less yellow or green; but the expectorated matter most characteristic of consumption are globular fleecy masses, which, when spat into water, spread out in a round form, like a piece of money; hence the French call these masses nummular expectoration. Louis says he has met with these round, separated, woolly masses only twice, unconnected with tubercles; still they are not characteristic of consumption, but may sometimes be met with in other diseases.

The changes which take place in the lungs are ascertained by listening to the sounds made in breathing, to do which effectually a practical study of auscultation must have been gone through; so we omit these indications, saying merely that they point out to the practiced ear the site of the diseased deposit in the lungs, the extent of the deposit, and the changes in it, the softening of the matter.

The approach of consumption is often very insidious—debility, emaciation, indigestion, etc., etc., with slight cough—but, in all cases, there is a marked undue quickness of the pulse, while it is also small. Dr. Guy, in some excellent practical remarks, says that he has seen the pulse amount to 140, when debility was the only marked symptom. Pain in the forehead and eyes, and also palpitation sometimes, are the first symptoms which attract attention.

We will now speak of spitting or coughing of blood.

HÆMOPTYSIS, OR SPITTING BLOOD.

This discharge of blood is frequently caused by the existence of tubercular matter in the lungs; and in 1,381 cases of consumption, it occurred in the proportion of 63 per cent.

Symptoms.—Oppression at the chest, dry tickling cough, pulse frequent, difficult breathing, salt taste in mouth, flushed face; then a cough, with discharge of more or less blood; more or less of fever.

Causes.—A certain age, from about fifteen to forty-five; a full habit; hereditary predisposition; and it may be excited by exertions in singing, etc.; by the suppression of certain discharges, as of the menses, for one; by certain states or disorders of the heart; by tuberculous deposit. We must distinguish blood brought up from the lungs by its florid red color and frothy admixture, by its expulsion through the means of a cough.

We should examine the nostrils, gums, and upper gullet, to make sure that the blood does not come from thence.

Now this hæmoptysis may be cured in almost all cases, except those in which consumption has become declared and confirmed.

Treatment of Coughing of Blood.—We must remove fullness in the chest by a blood-letting, if the pulse be full and the face flushed, or if there is much distress of breathing, and if the blood is thrown up in considerable quantity. But we may leech or cup in less grave cases.

We must keep the patient quiet by low diet, repose; cold liquids or ice; and the patient's head should not be suffered to lie low. Then, when the system has been freed from fullness of vessels, and from active fever symptoms, we may give astringents.

No. 105. Dilute sulphuric acid.....	15 drops.
Tincture of opium	10 drs., or more.
Syrup of roses.....	1 dr.
Water	1 oz.

To be given every third or fourth hour.

If these acid draughts do not stop the bleeding, give the sugar of lead (No. 105); but watch the gums for the blue line, as described at lead colic. Stop as soon as this blue color begins to appear.

No. 106. Purified sugar of lead (acetate of lead)	6 to 12 gr.
Extract of opium.....	3 gr.

Add conserve of roses, enough to make into six pills; one to be taken three or four times a day.

Or it may be taken in a fluid form, as follows :

No. 107. Purified sugar of lead.....	2 or 3 gr.
Dilute acetic acid.....	30 drops.
Tincture of opium.....	5 to 10 drops.
Syrup.....	1 dr.
Water	1 oz.

To be given every four hours.

While this acetate, or sugar of lead, is given, vegetables must be avoided, as also every thing which might bring on an evolution of carbonic acid gas ; for then a carbonate of lead would be formed, and the carbonate of lead is poisonous.

If hemorrhages have been thus checked or stopped, we may give alum.

No. 108. Alum (sulph. of alumine).....	10 gr.
Epsom salts.....	$\frac{1}{2}$ to 1 dr.
Diluted sulphuric acid.....	20 drops.
Syrup of white poppies, or simple syrup.....	1 dr.
Distilled water.....	1 oz.

Every four hours.

Treatment of Consumption must be varied according to the state in which the deposit in the lung may be.

Before the deposit has softened, repeated counter-irritation should be tried ; sea voyages in tropical regions during the cold seasons ; uniform temperature ; a residence in certain climates. (See CLIMATOLOGY OF UNITED STATES.)

With these, if there is no excitement, give cod-liver oil, preparations of iron, in small doses ; liniments to produce an eruption. (See SCROFULA.)

In the stage of softening, where there is abundant expectoration, an emetic or two every week, for two or three weeks.

No. 109. Tartar emetic	$\frac{1}{2}$ to 1 gr.
Powdered ipecacuanha.....	20 gr.

Or this :

No. 110. Sulphate of zinc.....	20 gr.
--------------------------------	--------

To be taken in the morning, and warm water or camomile tea, to encourage the vomiting.

Then we must obviate the most distressing symptoms—the night sweats—by the sulphuric acid draughts, 20 drops for each dose. Sponging the chest every night with warm nitro-muriatic lotion

has been useful in my practice, and husbanded the strength. For the distressing cough, emulsions.

No. 111. Almond emulsion.....	6 oz.
Tincture of opium.....	1 dr. or more.
Medicinal hydrocyanic acid.....	6 to 10 drops.
Ipecacuanha wine, or tincture of squills, of either.....	60 to 90 drops.

One-sixth part, two or three times a day.

Against the wasting diarrhea, give the chalk and opium, or chalk and catechu mixture. (See DIARRHEA.)

A night pill :

No. 112. Compound squill pill.....	2 gr.
Soap pill	4 gr.
Blue pill	1 or 2 gr.

Make two pills, to be taken every night at bed-time.

Inhalations relieve some ; and warm water, with a few drops of henbane in it, may be inhaled.

For side-pains, use mustard poultices, blisters, stimulating liniments.

CORPULENCY

may become an absolute disease. If the secretion of the bile is impeded, the fat is slowly absorbed from the body. The fat may be reduced, if the patient will follow directions.

Dr. T. K. Chambers found that by gradually reducing the diet down to a small quantity, and giving 30-drop doses of the liquor of potash, much benefit has been derived. He raises the dose from 30 to even 90 drops, three times a day, in milk and water, as the best vehicle. Soap is an old remedy for too great corpulence.

Ten ounces a day of solid food are sufficient.

Breakfast should consist of dry toast or sea-biscuit ; and if much active exercise is taken, a small piece of lean meat. Dinner early—about one o'clock—on lean meat, stale bread or biscuit, maccaroni, or biscuit pudding. No liquids at the meal, but in half an hour afterward. No more solid food during the day. For supper, a piece of biscuit, with some water ; a cup of gruel before going to bed.

We must not despair of so reducing the weight as to enable the person to take exercise ; and the later in life the disease commences, the more favorable the result.

Fat, oil, butter, and all oleaginous food should be interdicted.

For exercise, walking, riding, rowing, or shooting.

Vinegar is used by many in great quantities, and it was a great favorite with young ladies who wished to be genteelly thin; but it can only be successful by producing indigestion, or by destroying the powers of the stomach, and preventing it from digesting any thing.

Dr. Chambers gives several instances of great obesity being reduced by giving the liquor of potash, as ordered above, and by a steady adherence to the diet recommended.

Arsenic influences the secretion of fat; but it is a remedy only fit for medical men to use; and it acts, perhaps, prejudicially on the stomach, so as to impede due digestion of the food taken.

WINDY SWELLINGS—EMPHYSEMA.

This sort of swelling arises from a distension or blowing up of the cells in the cellular membrane of the body. It is imitated by butchers when they blow up veal for sale. It is generally caused by a broken rib, or a wound in the chest; for in these cases, as the air is drawn into the lungs during respiration, so it issues forth by means of the communication made between the inside and outside. Every successive inspiration adds to the size of the swelling, until the whole body is swollen to an alarming size, the features being greatly swollen, as well as the rest of the body. On pressure with the finger, a crackling may be heard, which is caused by the air being pressed from one cell into another.

This emphysema need not give alarm when it is a consequence of a broken rib, since it will disperse as the rib bone unites. It sometimes arises spontaneously, or occurs after delivery.

Treatment.—Evacuate the air by scarifications; that is, dipping the shoulder of the lancet or knife into the swelling, just deep enough to penetrate to the confined air; then press with the hand.

If difficulty of breathing and pain exist, bleeding and laxatives may be useful.

Rub the distended skin with spermaceti ointment.

But there is another kind of emphysema, which exists in or on the lungs, and within the chest, brought on by straining efforts of the voice, violent cough, by certain diseases, and by certain states of the heart.

The general signs of this state are : Habitual dyspnoea (difficulty of breathing) ; fits of hard breathing ; cough sometimes ; palpitation as the disease advances ; no fever. The fits occur in the night, and on lying down ; or they are severe, if there be much wind in the stomach ; dropsy of the ankles, which creeps upward. The expectoration is of a thin fluid, like gum-water, and full of foam.

At length the countenance becomes pale and of bluish color ; the body is emaciated ; and if inflammation be added, death soon ensues. These are signs, very distinctive ; but he alone who can use the stethoscope can make himself acquainted with them.

Treatment.—No cure. We must remove aggravating causes.

Warm weather agrees ; hence warm clothes in cold weather ; the feet to be kept dry and warm.

To harden against colds and inflammations being brought on, apply tepid shower bath, until the cold shower bath can be used.

If the fits are violent, or the difficulty of breathing great, and the wheezing is heard loud and long, we may cup between the shoulders, and give the following :

No. 113. Compound spirits sulphuric ether..	30 drops.
Acetate of morphia.....	$\frac{1}{3}$ gr.
Camphor mixture.....	1 oz.

The blueness of the lips, which deters us from giving opium in bronchitis, here depends more on the temporary or spasmodic state, and opium acts beneficially.

The emphysema, just described, is called the vesicular, consisting of an enlargement or rupture of the air-cells ; and there is another kind, called interlobular, in which the air is contained, not in the enlarged air-cells themselves, but in the cellular membrane of certain parts of the lungs.

This will cure itself, and little can be done by art to accelerate the absorption of air. If air appear under the skin, or there is a crackling on pressure, let out the air, and press.

TYMPANY

is a violent drum-like distension by gas of the bowels or the belly itself.

The disease may come on suddenly or slowly ; flatulency and noises in the bowels are heard, and the air is frequently expelled

both upward and downward; there are colicky pains; the belly is swollen, hard, and tense as a drum; it sounds hollow; costiveness and difficulty in making water all attend on this disease.

When the air escapes from the bowels, through some ulceration, it is the second kind of tympany.

Causes.—Any thing causing loss of tone in the bowels; errors in diet; abuse of purgatives, of spirituous liquors; crude or badly boiled vegetables; nervous irritability or sensibility.

Treatment.—We must procure the ejection of the air, and prevent its reaccumulation. Give ether, oil of aniseed, oil of turpentine, ginger, cardamoms, capsicum, horse-radish root, tincture of rhubarb, alum. (See the remedies for FLATULENCE, under the head of INDIGESTION.) The assafetida clyster is very efficacious usually, or turpentine thrown up.

The belly may be rubbed with warm stimulating liniments, or a tight bandage may be applied.

To prevent the recurrence, give tonic (bitter) infusions. (See INDIGESTION.) All food of flatulent nature must be avoided, regular exercise taken, and warm, cordial aperients every now and then administered, such as this:

No. 114. Tincture of senna.....	1 oz.
Wine of aloes.....	2 oz.
Peppermint water.....	3 oz.
Syrup of ginger.....	$\frac{1}{2}$ oz.

Three table-spoonfuls occasionally, when costive.

When the air has collected, or is situate in the cavity of the belly, having escaped from the bowels, some recommend tapping the belly with a small pipe, etc., called a trocar.

DROPSY

is mostly a sequel, sign, or symptom of another disease, but the imprisoned fluid is often a cause of various symptoms which carry with them imminent danger to life.

Dropsies have been divided into active and passive—into dropsy in the head, heart, or chest, kidneys, belly, and cellular membrane.

Dropsy first showing itself in the ankles is usually a dropsy originating in some heart affection. When, in addition to the swelling in the ankles, a puffiness is observed in the face and

eyelids, it is probably dropsy from disease of the kidney. When the water first shows itself in the belly, it is a liver dropsy.

DROPSY OF THE CELLULAR MEMBRANE, OR ANASARCA.

This kind shows itself at first with a swelling of the feet and ankles toward evening, which disappears in the morning, after a night's recumbent position.

The swelling is usually soft and inelastic, retaining for some time the pit from the pressure of the finger. By degrees the swelling ascends, and occupies the thighs and trunk of the body, and continues to increase till the face and eyelids seem to be bloated. There is a hard, tense, brawny kind of swelling; here the fluid would not seem to have broken down the cells. When an increase of the fluid at length breaks them down, then the swelling becomes soft, doughy, pitting on pressure, with a shining glazed skin. After a time, difficulty of breathing, with cough and expectoration of a thin, watery fluid, are added. The urine is high-colored and scanty in quantity; costiveness, thirst, yellow skin, emaciation; lastly, heaviness, stupor, and slow fever.

The anasarca from cold comes on suddenly, and is of the hard kind of swelling; in that from rheumatism and disease of the heart, there are palpitation and difficulty of breathing, increased on exertion, as walking up ascents; short, dry cough; the patient can draw in a full breath easily; eyelids and cheeks swollen in the morning; pulse quick and weak, or full and soft; the urine does not coagulate by acid or by heat; nights restless.

Anasarca from disease of the heart is characterized by symptoms of diseased heart.

The dropsy from kidney disease: Besides the usual symptoms, the skin is singularly dry and pale; the urine will coagulate by acids or heat, and may be copious or scanty; its specific gravity diminishes, and there is often a deficiency of urea in it. There may have been pain in the region of the kidney, felt for some time before the dropsy came on, or some irritation in the bladder is seen in some cases.

The brain soon becomes oppressed in these cases of renal dropsy, and drowsiness, stupor, and coma are not unusual.

Anasarca may arise from a stoppage of the menses, or after scarlet fever.

The dropsy that supervenes upon scarlet fever generally begins from the fourteenth to the eighteenth day after the scarlet fever has commenced, and it is sometimes formidable.

Causes of Anasarca.—All causes of debility form the tendency. Exciting causes are certain diseases producing an obstruction to the free circulation of the blood; such as those of the heart, of the lungs, and of the kidneys; suppression of accustomed discharges or eruptions, or the sudden disappearance of the latter; intemperance in drink; pressure on the veins in several parts.

We may take a favorable view of the result, if the cause of the disease admit of easy removal, if the strength is not impaired, if the appetite be good.

Treatment of Anasarca.—We must try to remove the causes, to evacuate the fluid, and to strengthen the habit.

To evacuate the fluid, active purgatives, diuretics, or diaphoretics (sweat-producing) remedies are employed.

Active purgatives answer very well for the first, second, or third times, but, by repetition, they lose their power; then larger doses are given; yet the stools are still incomplete and painful. A more powerful dose is given, and then pain is felt, and an inflammatory state of the bowels is brought on.

Our best plan is to alternate purgatives with diuretics or diaphoretics; never to combine them in the same prescription. Elaterium, gamboge, jalap, colocynth, croton oil, supertartrate of potash may be given.

No. 115. Elaterium extract.....	2 grs.
Sugar.....	1 dr.

Rub well, mix, and divide into eight powders. Give one every fifteen or twenty minutes, till free watery motions are produced. But this elaterium excites so distressing a sickness, that few can long persevere. Cream of tartar is much praised, and Dr. Eberle especially recommends the following combination:

No. 116. Cream of tartar.....	1½ oz.
Sulphate of potash.....	½ oz.
Powder of dried squills.....	2 drs.
Tartar emetic.....	2 grs.
Mix.	

A tea-spoonful of this may be given four or five times daily, daily, with benefit.

Or this imperial drink:

No. 117. Cream of tartar.....	$\frac{1}{2}$ oz. to 1 oz.
Sugar.....	$\frac{1}{4}$ lb.
Recent lemon-peel.....	3 drs.
Boiling water.....	3 pints.
Mix.	

Diuretics are perhaps the most efficacious, where there is no disease of the kidney.

No. 118. Blue pill.....	2 grs.
Compound squill pill.....	3 grs.

Make a pill, to be taken every night, but watch the gums; and do not salivate. The squill will disagree with many, even in very small quantity.

No. 119. Acetate of potash.....	$\frac{1}{2}$ oz.
Spirits of sweet niter.....	$\frac{1}{3}$ oz.
Decoction of fresh broom.....	8 oz.

Two table-spoonfuls thrice daily.

The foxglove is often given, but it should only be given by a medical man.

Where remedies can not be borne, when taken into the stomach, we may try rubbing in the following:

No. 120. Tincture of squills,	} of each.....	$\frac{1}{2}$ oz.
Foxglove,		
Colchicum seeds,		
Camphorated oil.....		1 $\frac{1}{2}$ oz.

This is to be rubbed in for from ten to twenty minutes, by means of flannel.

Scarifications, or what is called acupuncture; that is, introducing a needle's point, by a rotary motion, into the skin, at various points. A small bead of fluid will appear, and a good deal of the fluid will drain away, in this manner, with time.

If the fluid is discharged, give tonics, good food, good air, and exercise, so as to strengthen the patient as much as possible.

DROPSY OF THE BELLY.

Here the belly swells progressively; the fluid can be felt by the finger.

The general symptoms which arise are those caused by the pressure of the fluid; difficulty of breathing; full and suffused face and eyes; thirst; a dry skin; scanty urine, and torpid bowels.

Causes.—Disease of the liver, spleen, or any tumor pressing on the veins.

Treatment.—If there be pain on pressing the belly, leeches should be applied, and then mercury, so as to affect the gums slightly.

The list of remedies are the same as for anasarca—purgatives, diuretics, etc.; but when all have been tried, and the distension is very great, tapping must be advised.

DROPSY OF THE CHEST

comes on gradually. At length there is felt a sense of oppression or weight at the lower part of the chest-bone, with slight difficulty of breathing when at rest, and in an erect posture. The sufferer tries to lie down, but finds he can not, from a feeling of suffocation which ensues; his pillow must raise the head very high, or a feeling of suffocation will follow. All bodily exertions aggravate; the sleep is dreamy, and the patient awakes in terror; the pulse is irregular, perhaps intermits, and is hard to the finger; thirst is urgent, and the urine scanty and high-colored.

As the disease advances, the lips become of a dark or purple-red, the face pale or livid, and the difficulty of breathing increases; the legs and hands cold. If the fluid is only on one side of the chest, he can lie down only on that side.

Treatment.—A favorable result must depend on the accompanying disease. We must first reduce any inflammatory tendency, if any exist, by cupping, leeches, tartar emetic embrocation to produce an eruption.

To get rid of the fluid, the purgatives, as elaterium, scammony, etc.; the diuretics of acetate of potash, sweet spirits of niter, infusion of digitalis.

Diuretic Mixture.

No. 121. Acetate of potash.....	30 grs.
Sweet spirits of niter.....	1 dr.
Infusion of foxglove.....	$\frac{1}{2}$ oz.
Peppermint-water.....	1 oz.

Three times a day. But the foxglove must be watched; and if the pulse suddenly lowers, or a feeling of lowness or faintness comes on, the foxglove must be discontinued.

I have been obliged to give blue pill, or calomel—three grains

of the former, and one of the calomel—night and morning, to very slightly touch the gums. As soon as this happens, the urine is increased by the diuretic mixture directly.

THE KIDNEY, OR RENAL DROPSY.

To the general symptoms of dropsy already detailed, there are some symptoms added, showing the complication of the kidney as a cause; pain in back; instead of the dark red lips and bluish countenance, we see a dingy sallowness of skin, and the urine is coagulable by heat, and it is of lower specific gravity than is natural. The lower, the greater danger; and a density of 1018 to 1010 betokens great danger. The specific gravity is ascertained by a peculiar instrument called a hydrometer.

Treatment.—If there is pain in back, cup; but do not take away much blood. Here diuretics must not be given. Purgatives and sweating medicines are to be given.

Dr. Osborne says, when a patient was under his care with general swelling, (œdema,) coagulable urine and dry skin, I directed him to keep his bed. A purgative was first given—the senna mixture in preference to others—then foot baths, hip baths, or general baths were ordered; the last either of water or of vapor. At night, eight grains of James's powder, with four of Dover's powder, were given.

The usual drink was barley-water; but if there were any stupor or headache, the Dover's powder was omitted.

While in the bath, two drachms of ammoniated tincture of guaiacum were given.

If the baths were followed by cold feet and legs, they were discontinued. Then give:

No. 122. Carbonate of ammonia.....	30 grs.
Camphor mixture.....	6 oz.

One ounce to be taken every two or three hours. Warm bags during the day.

As soon as perspiration sets in, amendment or recovery may be hoped for. During convalescence, bandages and exercise; nutritious diet.

Water in the head. (See DISEASES OF CHILDREN.)

Scrofula. (See the same.)

SKIN DISEASES.

THE CHICKEN POX—VARICELLA.

Slight fever for twenty-four hours, then reddish pimples, which on second day contain a colorless fluid—vesicles they are called. On the third day the colorless fluid becomes yellowish; soon after they break, or are accidentally broken, and a thin scab is formed.

Generally before the fifth day the whole eruption disappears.

Treatment.—Seldom necessary. Gentle aperients, with saline draughts, if there is fever.

FALSE MEASLES—ROSE RASH—ROSEOLA.

Slight febrile symptoms, then patches of different form and size, of a deep rose color, which disappear in from two to seven days.

Causes.—Teething, irritation of stomach or bowels. It is sometimes epidemic.

Treatment.—Salines; aperients; a warm bath or two.

ATONIC ULCER, OR RUPIA.

This disorder is observed in persons of unhealthy habit, who are what are called cachectic; that is, in a bad state of health from previous disease, or exposure to unwholesome influences.

The eruption consists of round, flat vesicles, about as large as a dime, which are filled with a serous fluid.

This fluid changes into pus, or yellow matter. The vesicles shrink, and thick brown crusts form, beneath which crusts the skin ulcerates. The scabs fall off; the ulcers heal more or less quickly. The eruption affects chiefly the legs.

The duration of the disease is from a few weeks to several months.

Causes.—Every thing which produces an unhealthy habit of body. One species sometimes terminates fatally; it occurs in infants.

Treatment.—Our attention must be directed to the general state of the body, and we must try to produce healthy blood by regulating the secretions, giving tonics, as bark, steel, wine, etc., and stimulants. Locally, by warm baths, or by alkaline baths. To the ulcers, lunar caustic, stimulating ointments, etc.

TETTER, OR HERPES.

This is a non-contagious affection of the skin, with an eruption of globular vesicles, situated upon inflamed patches of skin, of an irregular form, and of small extent.

There are usually no signs of constitutional disturbance, and the disease lasts for two or three weeks.

Each vesicle continues for about ten days, and terminates by its contents being absorbed, or by a drying up of the contents; or else it breaks, leaving a thin, brown scab, which falls after some time.

The different kinds are classified into one, which is irregular in form and distribution; and another, which shows a circular arrangement of the clusters.

A sense of heat, tingling, or smarting precedes; then red points are to be seen; the redness increases in the course of a day, and then little bladders, filled with a transparent serous or watery fluid, succeed. On the third day, the fluid becomes turbid, and then the vesicles shrink, when, at last, thin, brown scabs form, to be thrown off in scales by the twelfth day. The redness and discoloration of the skin slowly disappear. Sometimes ulcers are left; but they are superficial. Languor, thirst, and loss of appetite may attend.

Herpes may be met with on the lips, the eyelids, nose, or ear, and on the foreskin.

Circular kinds of patches are seen of various sizes, seldom exceeding the size of the palm of the hand. They are of a vivid red color, and the numerous vesicles run together. These patches run through their course in about ten days; but they may appear in succession, become chronic, and continue for weeks. The face, neck, chest, and arms are the chosen site.

In another form the patches are circular or oval, vividly red, but becoming pale in their centers, the vesicles being developed on the outer margins of the patches, the size of which increases by an extension of the circumference. The vesicles go through similar changes with those above described, and fall off in nine or ten days, leaving a red skin, or they may form and fall off in dry scales.

This eruption is only dangerous when it is the sign of some inward complaint, or when it occurs in old people; for gangrene is then apt to take place. It has been of service in some constitutions, by preventing an attack of consumption. In such cases, be-

ware of what is called driving it in by cold applications, astringents. Persons so situated are known by being of delicate habit, by marks of debility, and susceptibility for disease.

Treatment.—Gentle laxatives, sweating medicines, and diluents must be given; but if febrile symptoms run high, bleed.

A simple ointment to the patches; and when the vesicles have burst, sprinkle with starch powder. When the eruption is acting as a counter-irritant, we should follow the indication by keeping up an irritation on the skin after the eruption has disappeared.

If there is debility, tonic infusions of gentian, calumba, etc., with carbonate of soda or potash, twenty grains each, thrice daily, in one ounce of infusion. The acetate of potash, twenty grains, is useful, instead of the carbonate; or they may be combined.

For herpes on the lip, this ointment may be used:

No. 123. Ointment of elder flowers.....	1 oz.
Liquor of sugar of lead.....	1 drachm.
Mix.	

When the eruption becomes chronic, the following ointment should be tried; and if it fail, then a blister applied:

No. 124. Sulphuret of lime	60 grs.
Camphor in powder.....	15 grs.
Hog's lard	1 oz.

HUMID SCALL, OR ECZEMA.

Non-contagious; minute vesicles in great numbers, often running together; the inflammation of irregular form, and mostly spreading over a considerable surface. The little bladders are often so close to each other, that one great vesicle is formed.

The vesicles terminate by drying up, or by rupture and formation of scales, and the acute kind lasts from a week to a month.

Eczema is acute or chronic.

Causes.—Spring and autumn, and the female sex predispose. Exposure to intense heat, irritation of the skin by a blister, friction with mercury, the handling of dry powders, as flour, sugar, etc.

This may be mistaken for itch.

Treatment.—Aperients, cooling drinks, simple diet, warm baths, and warm dressing. According to the degree of inflammation or fever, our remedies should be proportioned.

A decoction of goosegrass, the galium aparine, has been much

praised. One ounce to a pint and a half of water, boiled to a pint. Drink half a pint to a pint daily.

The distressing itching or smarting is best relieved by a lotion of three grains of cyanide of potash to one ounce of water. Sulphur and greasy applications are to be avoided.

THE CHRONIC ECZEMA

often follows the acute, and is a very intractable disorder. The skin becomes highly inflamed, and is marked by fissures at the joints. In some cases, so much acrid discharge exudes as to cause the clothes to stick to the skin; in others, there is a surface, covered with shining crusts, and the itching is intense. Grocers, and other tradesmen who handle irritating powders, suffer from this scall—forming grocers' itch on the backs of the hands.

Eczema may be transmitted from one person to another, by means of the discharge from the vesicles; but it is still not contagious, the discharge acting merely as a local irritant.

Treatment.—As eczema acts very often as a safety-valve to the health of the patient, we must check the discharge very cautiously, and, indeed, not before a counter-irritation on the skin, elsewhere, or in the bowels, have been established.

The eruption is difficult of cure when there is a coexistent state of disease within the body; because, we must first remove the constitutional affection, when the eczema would soon disappear almost without medicines, and, as it were, of itself.

The redder the skin, the more we should lean to a lowering plan—active aperients; then carbonate of soda or potash, three times a day; vapor baths; vapor douche; sulphureous baths—three ounces of sulphuret of potash in enough water for a bath.

The itching must be allayed, for it prevents sleep.

No. 125. Hydrocyanic acid.....	$\frac{1}{4}$ to $\frac{1}{2}$ oz.
Alcohol.....	$\frac{1}{2}$ oz.
Distilled water.....	$7\frac{1}{2}$ oz.
Sugar of lead.....	16 grs.
Mix.	

Or this ointment:

No. 126. Cyanide of potash.....	12 grs.
Oil of almonds.....	$\frac{1}{4}$ oz.
Ointment of white wax.....	2 oz.
Mix.	

My plan of treatment is, to begin with calomel and colocynth pills—two at night—and next morning the salts and senna mixture, or a seidlitz powder. Then I give

No. 127. Acetate of potash.....	20 to 30 grs.
Syrup.....	1 or 2 drs.
Water, or infusion of gentian.....	1 oz.

Thrice daily, and long-continued. It soon alters the urine for the better, increasing its quantity.

The itching is to be allayed as above directed.

To show what benefit is derived from aperients, I will mention a case which lately occurred. A lady had suffered annually from eczema, and had sometimes been confined to bed for six or seven weeks at a time. Her doctor, who seldom or never ordered medicines in any case, told her to apply poultices, to take no medicine, and to wait for warm weather. The poultices increased the itching, and, dissatisfied with this treatment, she consulted me, and I prescribed.

By mistake the druggist ordered the calomel, etc., pill to be taken every four hours, and the aperient mixture between the doses. For some twenty-four or thirty hours the bowels were in incessant action, and inflammation might have been induced.

I visited her forty-eight hours after the prescription, and found that the redness of the skin had quite disappeared, and the itching was gone. In three weeks a cure was nearly complete.

Where we have reason to suspect internal disease, the eruption must not be dried up without giving repeated purgatives, and using counter-irritants—as croton oil liniment. and in some cases it would be better not to attempt a cure.

MILIARY ERUPTIONS—SUDAMINA, OR MILLET-SEED RASH.

Round, prominent vesicles, about equal in size to millet-seed—transparent at first, but, in twenty or twenty-four hours, opaque, resembling pearls scattered on the skin. There is a profuse sweat of a sour, rank odor. They continue two or three days; shrivel and form thin scabs; some fever. They are always associated with excessive heat of the skin, and often with profuse perspiration; and hence they are occasionally met with in measles, scarlet fever, and small-pox. Used to be of frequent occurrence in former times.

Causes.—Any thing debilitating—excessive discharges, irritation in stomach and bowels.

Great dejection of mind, and prostration sometimes attend; and little dark spots, like flea-bites, are interspersed in bad cases; vomiting, difficult respiration, convulsions, intermitting pulse, and dropsical swellings accompany fatal cases.

Treatment.—Diminish immoderate heat and sweating, by cold cautiously applied, by gentle aperients, and by the mineral acids; the dilute sulphuric acid, ten to fifteen drops in infusion of roses, or with quinine, one grain.

Support the strength by ammonia—bark and wine—and wherever restlessness requires it, give opium. If the eruption should unexpectedly disappear, and inward suffering follows, the warm bath, musk, camphor, opium, and blisters.

RUNNING, OR CRUSTED TETTER OR SCALL—IMPETIGO.

Clusters of small pustules (vesicles with yellow fluid in them) raised a little above the skin; they burst in two or three days, and the discharge hardens into thick yellow, brownish-greyish transparent crusts. The scabs rest on an inflamed base, of irregular shape, and are moistened by the discharge. Successive crops often appear, and the disease lasts from three or four weeks to as many months, or even years.

Causes.—Spring and autumn predispose; so does childhood or the scrofulous temperament. Errors in diet, impure air, want of cleanliness, etc. Not contagious. It is unattended with danger.

Treatment.—If high excitement be present, a full pulse, headache, and fever, then blood-letting or leeches near the seat of the disease. Low diet and saline drink. But, in less severe forms, tepid baths, vapor douche, with tepid aperients.

I would treat this just as I would treat eczema.

Here the decoction of the galium aparine, or goosegrass, must be tried. (See ECZEMA.)

For the troublesome itching:

No. 128. Hydrocyanic acid, dilute.....	$\frac{1}{2}$ oz.
Alcohol	$\frac{1}{2}$ oz.
Rose water.....	7 oz.

Make a lotion.

Acetate of lead, fifteen grains, may be added.

In chronic cases, alkaline lotions to the skin, tepid baths, the dilute acids, or lunar caustic, may be applied; stimulants.

When the head is attacked, crop or shave off hair; then vapor douche, and water dressing.

PAPULOUS SCALL—ECTHYMA.

An eruption in distinct inflamed circumscribed spots, which become of a considerable size; pustules form on the center. In two or three days these dry up, leaving thick scabs behind them, and when they fall off, the skin underneath is purple. In bad cases, there are left unhealthy ulcers. Pain and slight fever may accompany. Grocers, brick-layers, etc., are subject to this.

Treatment.—Gentle aperients, wholesome food, alkaline baths, sea-water baths, caustic to ulcers, oxyde of zinc ointment, tonics, quinine with sulphuric acid, infusion of gentian with carbonate or acetate of potass.

LICHEN, OR DRY PIMPLES.

An eruption of small, hard pimples, sometimes of the color of the skin, sometimes red, arranged in patches or clusters, with severe itching. It is usually a chronic disorder.

It terminates in small scabs falling off.

The lichen strophulus forms the red gum, white gum, or tooth-rash of children; but lichen attacks grown-up persons. The causes are an abuse of spirits, handling dry powders, grief, disorder of stomach.

This disease is not contagious, nor dangerous; but is difficult to cure.

Treatment.—According to symptoms. Lower the system, if it is too high, in the usual way.

Chronic cases require stimulants. Ointments of biniodide of mercury, one drachm to one ounce of lard.

Sulphur and iodine vapor.

The prickly heat of tropical climates is a species of lichen. The pricking, itching, and tingling are almost terrible to bear, though it is better to bear them. No remedies have availed much. At Sierra Leone the negroes rub the juice of the lime upon the skin; of little use. Cold sluicings, useless. Light clothes, open bowels, avoiding exercise in open day, strict temperance in eating

and drinking, with a determined resolution to resist the first attacks with stoical apathy, form the best and only mode of combating this troublesome foe.

In all kinds of lichen a moderate cooling regimen should be observed, and all stimulants avoided. Treat and lower according to state and symptoms. A weak lotion of acetic acid and water, or vinegar and water, for the itching; avoid warm baths. When chronic, use this ointment:

No. 129. Calomel.....	1 dr.
Powdered camphor.....	20 grs.
Lard.....	1 oz.
Mix.	

PRURIGO

is a chronic and non-contagious eruption, characterized by pimples larger than those of lichen, not differing in color from the integument, and attended with an excessive and burning itching; when scratched, the pimples become covered with small black scabs, and when the pimples decline, they leave yellowish stains behind them.

The itching is tormenting, and has been compared to burning fires.

Treatment.—For this obstinate disease, daily alkaline or sulphur baths, of seventy degrees of heat; or, if these irritate, a simple soap bath.

This liniment has been used with benefit:

No. 130. Croton oil.....	$\frac{1}{2}$ to 1 dr.
Oil of almonds.....	1 oz.

Several topical remedies against the itching should be at hand in the night.

Mons. Gibert's Ointment.

No. 131. Hydrate of lime.....	2 drs.
Subcarbonate of soda.....	} of each $\frac{1}{2}$ dr.
Laudanum.....	
Lard.....	1 oz.
Mix.	

Mons. Alibert's Ointment.

No. 132. Laudanum.....	} of each 1 dr.
Sublimed sulphur.....	
Oxide of zinc.....	1 dr.
Oil of almonds.....	1 oz.
Lard.....	3 oz.
Mix.	

Laxative medicines, diuretics (increasing flow of urine), acid

tonics, etc., with light, cooling diet, avoiding all stimulating food and drinks.

This disease is often accompanied by lice, when a wash of bi-chloride of mercury must be used.

LEPROSY, OR LEPRA.

A non-contagious, chronic inflammation of the skin (dermis), and the eruption consists of raised and circular patches, which are speedily covered by thin, semi-transparent scales of white upper or scarf-skin. The patches are prominent round their circumference, and depressed in their center, and they increase by an extension of the circumference, while the center returns to the natural state.

The scabs are thrown off, and replaced by successive formations.

Causes.—Autumnal season; male sex predispose; while irritation of the skin, strong mental emotions, salt meat, all debilitants are exciting causes.

Treatment.—Cure very difficult; quietude; a cooling, unexciting regimen, and bathing are chiefly to be relied on.

I have met with success from giving the acetate of potass, and would try the goosegrass decoction, twenty-five or thirty grains in three or four ounces of decoction, thrice a day.

Mercury and iodine combined, in form of biniodide of mercury, from one-sixth to one-fourth of a grain, seem to exert almost a specific influence over the morbid state of the skin, according to the late Dr. A. T. Thompson.

He also gave the iodide of arsenic, one-tenth of a grain, gradually increased to one-third of a grain. But this remedy requires close watching; so that when heat of mouth and gullet, anxiety at the pit of the stomach, or pain and gripings are complained of, discontinue it. Quickness and hardness of the pulse, with slight puffiness of the lower eyelids, show that arsenic is beginning to act no longer as a remedy, but as a poison.

Tar has been recommended, and Mons. Lemery orders an ointment which cured eight patients out of fourteen, in from five weeks to three months:

No. 133. Napthaline.....	2 to 4 parts.
Lard	30 parts.
Mix.	

Apply on folds of linen, night and morning.

DRY TETTER—PSORIASIS.

This is a chronic, non-contagious inflammation of the skin. Patches are seen of irregular size and form, covered by thin, irregular, whitish scales of dried scarf-skin. The patches are raised above the level of the skin, flat upon their surface, or somewhat more raised at their centers than at their circumferences, and deep chaps or fissures intersect here and there. Spring and autumn are the seasons favorable to this complaint. Bakers and washerwomen suffer from it, forming what is called baker's itch, washerwoman's itch.

In some of the kinds, there is a troublesome itching, which always occurs at night.

Treatment.—This is a troublesome, intractable; and, in the inveterate form, an incurable disease.

The treatment is much the same as that applicable to psoriasis. Various remedies have been extolled as almost specifics, and just now the goosegrass or galium aparine is loudly talked of. (See ECZEMA and PSORIASIS.)

DANDRIFF, OR PITYRIASIS.

This consists of a chronic superficial inflammation of the skin, with desquamation, or scaling off, to a great extent, the scales being constantly renewed. All parts may be attacked, but the head most frequently. Itching, at times slight; at others, severe. It is caused by irritation of the skin by heat, a strong sun, or by chemical or mechanical irritants.

The abundant branny scales on a number of small circular patches, of a red, yellow, or black color, distinguish this from all diseases of the skin.

Treatment.—No danger to be feared; but it is usually difficult to cure.

Cleanliness, tepid baths, tonic medicines, blue pills, the gray powder, as an alterative—three grains, every night, of either are sometimes necessary. The ointment of nitrate of mercury, called also citrine ointment, and which can always be procured of an apothecary, should be tried. To allay the itching, the cyanide of potash, or the hydrocyanic acid, as before recommended.

ITCH, OR SCABIES.

This eruption is usually met with between the fingers, or on the wrists, the inside of joints, and at the bends of the joints. It is characterized by scaliness of the scarf-skin, by vesicles, or by what are called pustules—little bladders filled with a yellow fluid called pus. The itching is very great, and it is increased by warmth, by stimulating food or drinks. The scaliness is said to be owing to the burrowing of a little creature, or animalcule, called the itch insect, which burrows beneath the outer skin, and which excites irritation.

The vesicles are few and scattered, bearing no proportion to the number or site of the animalcules. They are more or less conical or rounded, according to their situation, and the fluid in them differs in color and consistence. If we look at an early vesicle, a spot may be observed on its surface. Here the insect enters; and from this spot a white line, straight or curved, may be traced, of varying length, up to five or six lines. At the end of this line, which is the burrow of the acarus, the minute insect is to be found. Yet the acarus is never situated within the vesicle nor within the pustule, and there is no communication between the vesicle and the burrow. The eruption and the itching are in proportion to the vigor of habit in the affected person. The more debilitated the person, the slower the progress of the eruption, and the less violent the itching.

It is of importance to know when a case of itch is before us; for eczema, prurigo, and lichen may resemble it rather closely. The itch is known, first, by a peculiar scaliness and undermined state of the outer or scarf-skin; secondly, by the conical vesicles, with needle-shaped and transparent points; and, thirdly and principally, by the presence of the itch insect, which may be extracted from its retreat by means of a sharp instrument in an experienced hand.

Itch never attacks the face.

The period at which the vesicles appear, after exposure to contagion, varies with the state of health and the age of the subject, and the season of the year. In strong, healthy children, the vesicles have appeared in two days after contact, the ordinary period being four or five days, which in weakly subjects may be further postponed. In adults, the period is a week or ten days; or, in

winter, a fortnight or three weeks. In old persons the period is still longer.

The period of duration of the itch is usually a week or ten days, but it may continue for months.

Treatment.—To effect the cure in the shortest possible time, the skin must be prepared by a thorough ablution, with a warm solution of sub-carbonate of potash, containing about half a pound of alkaline salt to a gallon of water. The best preparation is the compound sulphur ointment, of which a grown-up person should rub well four ounces into the skin, before the fire, and into the affected parts—especially morning and evening—for two days.

A child would require half the above-stated quantity.

On the morning of the third day, a warm bath, and wash the skin thoroughly with plenty of soap, when the cure will be completed.

The compound sulphur ointment may excite much irritation; then, if time is not of importance, recovery may be effected in a week, by mixing one ounce of sub-carbonate of potash with a pound of the simple sulphur ointment.

Some soapy compounds have been recommended.

No. 134. Sub-carbonate of potash.....	2 drachms.
Water.....	1 oz.
Olive oil.....	$\frac{1}{2}$ oz.
Camphor.....	2 drachms.
Sublimed sulphur.....	5 oz.
Mix.	

No. 135. Sublimed sulphur.....	} of each $\frac{1}{2}$ pound.
White soap.....	

These do not soil the clothes.

In young children and in families, when the odor of the sulphur is particularly objected to, the following has been found effectual in eradicating the disease: One drachm of camphor, dissolved in one ounce of oil.

The clothes, bedclothes, etc., should be disinfected by exposure to the fumes of sulphureous acid gas, or they should be destroyed.

FISH SKIN, OR ICHTHYOSIS.

A number of small, hard, thick, and dry brown scales, overlapping each other like the scales of a fish, form on the palms of the

hands, the soles of the feet, the face, eyelids, limbs, and around the joints. There is no accompanying inflammation, pain, nor itching; but there is a disagreeable odor.

Causes.—Obscure, hereditary; the person is generally born suffering from it. When hereditary, it is incurable, and always very obstinate of cure. No danger to life.

Treatment.—Vapor baths; strong stimulating applications to the skin; blisters, caustics, the vapors of sulphur and iodine.

Internally, arsenic, or the iodide of arsenic must be given. (See LEPROSY.)

Warm alkaline baths are essential, containing the subcarbonate of soda, which dissolves the albumen, and softens the hardened crusts.

CORNS.

A corn is an increased thickness of the outer or scarf-skin, caused by undue pressure. Corns may be divided into laminated, fibrous, and soft corns.

The laminated corn arises from continued pressure, producing a congested state of the skin; in consequence of which the part of the skin called papillæ elongates, the papillæ in the center, where there is the greatest pressure, being longest of all.

Fibrous corns are those on the summits of which there is an appearance resembling the ends of fibers, and if the top be cut off horizontally, these vertical fibers seem as though they were cut across, giving rise to the belief of roots or cores to the corn.

These so-called roots are merely the center papillæ, which are elongated, and by the pressure on the center of the corn, are bent and doubled down.

Soft corns are very painful and annoying, and more so than the two preceding kinds. They are seen between the toes; are always of small size; are not convex; and, from being constantly immersed in the perspiratory secretion of the part, they are soft.

Causes.—Are pressure and friction, from boots being too small or too large. In the first two kinds, the pressure is directly vertical, while in soft corns it is pressure of the toes against each other.

Corns may be seen on the feet, on the hands, or on the knees.

Treatment.—Curative or palliative. The first, says Mr. Wilson, in his excellent account, consists in the removal of the cause; the

other in the removal, from time to time, of portions of the thickened scarf-skin.

Rest, avoidance of tight boots.

Plasters spread upon spunk, or on thick leather, and cut out in the center, so as to remove pressure. One bit of plaster should be placed over another, or with holes of proper size cut in their centers, until enough are placed to prevent pressure.

The palliative treatment comprises the removal of the corns either by scraping or filing, after the corns have been well soaked and softened in an alkaline solution, or by cutting in the hard or soft state.

A certain cure for corns has been proposed, and it is thus composed:

No. 136. Tincture of iodide.....	$\frac{1}{2}$ oz.
Iodide of iron.....	12 grs.
Chloride of antimony.....	$1\frac{1}{2}$ oz.
Mix.	

The chiropodists remove the central part of the corn, leaving a raised line of circumference as a circular cushion of protection.

Caustic is often applied; or by plasters containing the solvents of albumen, soda, and potass.

Dr. F. J. Brown has proposed an effectual remedy of getting rid of a corn by enucleating it, which he did on his own person. He says the corn is seated in a cup-like depression of the true skin, as is a stone in a brooch. His method is to pass a penknife vertically around the corn, for the full depth of the indurated cuticle, in the situation of the marginal line. The true skin is not wounded nor any blood spilt; and the corn may be turned out bodily, leaving the true skin perfect. The depression soon fills up.

Entire removal is the only cure for the soft corn; and their formation may be prevented, and when present they may be rendered bearable, by daily ablution with soap, and by placing a piece of cotton wool between the toes after each ablution.

Many advise bathing or washing the feet with spirits and water. Corns may produce bunions; or, when seated on joints, they often excite inflammation about the articulations.

WARTS.

depend upon the state of the papillæ of the true skin. They may be developed at any period of life, and arise without any apparent

cause, to continue for the rest of life, or disappear unexpectedly; most frequent in children.

Caustic, or nitric, or strong acetic acid removes them, or any strong stimulant. Electricity disperses them; sparks must be sent through them for five minutes daily, and they do not reappear as they do when removed by other means. A strong decoction of galls may be applied. In a few days, or a week, this decoction will most effectually remove them.

PURPURA—LAND AND SEA SCURVY.

This is known by the effusion of blood under the skin and into other parts, forming patches of various size in considerable numbers. It was divided into three kinds—the simple, the hemorrhagic, and the sea-scurvy.

The simple begins with uneasiness or slight giddiness; then an eruption of small round patches, of a dark red color, mainly on the thighs and legs, but also in any part of the body.

After a few days the first patches begin to fade, and new ones appear; the general health is not disturbed, and the disease may last from three or four weeks to as many years.

The causes are not well known.

Treatment.—Tonics, combined with a nourishing diet; mild aperients now and then. The object is to restore tone to the system.

The hemorrhagic form is marked by weariness, weakness; inaptitude for any exertion, bodily or mental; pains in the limbs, and patches like the above described, only larger; sometimes large vesicles filled with liquid blood; the gums are swollen and spongy; blood is discharged from the gums and other mucous membranes; the legs are stiff from the effusion of blood between the muscles; pulse feeble, sometimes full and hard.

A relaxed state is at the bottom of this disorder, and the capillary vessels are weakened, while the blood itself is altered from its usually healthy state, and its consistency is diminished.

A moist atmosphere; a scanty, improper diet. Long-continued difficulty of breathing, as in chronic bronchitis, will produce such a state.

Treatment.—If the pulse is full and hard, a small bleeding to eight or ten ounces; then tonics, a generous, nutritious, and mixed diet.

If debility be urgent, tonics and stimulants; turpentine will often do good. A table-spoonful of lemon-juice three or four times a day. Potatoes to be eaten.

SEA SCURVY.

Heaviness, weariness, dejection of spirits, anxiety, oppression at the pit of the stomach, are followed by sallow and bloated countenance, hurried respiration, looseness of the teeth, spongy, bleeding gums, offensive breath; old wounds, long since healed, break out afresh; severe wandering pains are felt, at night particularly; the skin is dry; urine small in quantity, turning blue vegetable infusions of a green color; the pulse is small, frequent, and at last intermitting. The intellect remains clear.

In the last stage, the joints swell and become stiff; the tendons of the legs are rigid and contracted; general emaciation ensues, and discharges of blood from many parts, and fetid evacuations, terminate the scene of suffering.

Although the terms sea and land scurvy are used by many persons, yet there is no difference in the diseases, except as to degree.

Causes.—Fatigue, hardship, and whatever debilitates, engender a tendency to scurvy. Exciting causes are improper diet, especially salt meat and biscuits, a deficiency of vegetable food, and of those articles of food which contain vegetable acids.

The patient will recover if there is little reduction of strength, and there has been no previous attack of scurvy; if the skin be moist; if flea-bite looking spots appear, when they are of a red and not of a dark color. But great prostration, extreme oppression, red eyes and flushed face, a rapid and weak pulse, profuse hemorrhages, spots of a dark livid color, fetid and involuntary evacuations, all denote an unfavorable result.

Treatment.—Medicines are little wanted, when compared with diet. Vegetable food; the orange, lime, and lemon, or the citric acid, as we use it in effervescing draughts. It is very convenient to carry, and as fresh fruit is often not to be got, the citric acid removes the difficulty.

If there is great prostration, tonics and stimulants; fermented liquors, ale, cider, spruce beer, infusion of malt, fermenting wines; the subacid fruits, sugar, molasses, potatoes.

Aperients occasionally. Cream of tartar, or sulphates of magnesia or soda; infusion of tamarinds.

For ulcerations of the gums, astringent gargles of alum, sulphate of zinc, decoction of bark, etc.; honey of borax painted on the gums is serviceable.

Acute pains are relieved by opium; and the oppression at the chest, and difficulty of breathing, by stimulants—the nitric and sulphuric ether, with camphor; for contractions and stiffness of the muscles of the legs, fomentations, friction, etc.

The great point is precaution, by a due admixture of vegetables with a due proportion of vegetable acids—lemon-juice or citric acid. The potato is one of the best vegetables. Potatoes, raw and sliced, are excellent anti-scorbutics. They should be peeled like cucumbers, and eaten with a little vinegar. Pumpkins and plantains are useful, but not so good as potatoes. Potatoes, it is said, are equally good boiled as raw; or, at all events, boiled potatoes will act as preventives.

The cold bath, friction with flesh-gloves, plenty of good air, exercise, and good food will fortify against the attacks of purpura or scurvy.

ITCHING, OR PRURITUS.

This itching is excited by the most trivial causes, and may continue for hours, depriving the patient of comfort or rest. As soon as dinner has been finished, or any stimulus has been taken, the tormenting itching begins. The warmth of the bed brings it on, and the morning is the only time when the itching ceases to annoy.

Scratching does not relieve, but augments the evil. But if the mind be engrossed with any agreeable occupation, and is diverted from dwelling on the itching, then the morbid sensation is for the time inactive; it rages again the moment the mind reverts to the itching. The attacks of pruritus are variable as to duration; they sometimes continue for hours without any amendment; at others, their periods are shorter. The disease may last for months, or even for several years.

It is the sign and consequence of some irritation in the mucous membranes of the body; sometimes in that of the stomach and bowels; at others, in the lungs; and in others, in the genito-urinary passages. It is situated in various parts of the body.

Treatment.—This must be general or local, or both.

By the first, we must regulate the secretions, if there is debility, tonic or bitter infusions, with sedatives, such as

No. 137. Infusion of gentian compound	6 oz.
Bicarbonate of soda.....	2 drs.
Hydrocyanic acid.....	5 drops.

A fourth part two or three times a day.

The diet must be light, nutritious, and easily digestible, avoiding any thing stimulating.

The local treatment, vinegar and water, or lemon-juice and water. When the itching is violent at the lower bowel, we must ascertain whether there are piles or fistula, or thread-worms, and act accordingly. A lotion of vinegar and water, of tincture of opium and water, will often relieve; so will a lotion of sugar of lead, or of sulphate of zinc; and brushing the parts over with Friar's balsam (tincture of Benjamin) gives marked relief—the last especially.

The itching that attends the urinary passage, in male and female, depends on some irritation of a neighboring part, which must be sought and prescribed for.

This itching is one of the most annoying and severe disorders to which man can be liable.

GRUBS, WORMS, COMEDONES.

The sebaceous glands of the skin are glandular organs in a bag-like form, which are embedded in the true skin; and the ducts or outlets of these glands either open on the outer skin, or they terminate in the follicles of the hair. In grubs, the sebaceous secretion is thickened, and produces distension of the hair follicles, into which it opens. When it reaches the mouth of the follicle, the secretion hardens, becomes deeper in color, and, at the same time, from being exposed to the dust and dirt of the atmosphere, the extremity is rendered dingy and dark-colored. This discoloration of the sebaceous substance, at its extremity, gives rise to the appearance of a round black spot. Thus says Dr. E. Wilson, and continues: If a fold of skin, including one of these spots, be pressed between the fingers, the concreted secretion is squeezed out, about a line in length, and blackened at its extremity, making it look like a worm.

This secretion is sometimes hard and concrete, instead of being soft; it then looks like horn, and might require to be removed by a pair of ciliary forceps.

This disorder of the sebaceous glands is commonly met with on the face of persons in whom the cutaneous circulation is less active than natural—and particularly among the inhabitants of cities and large towns, in whom the brain and nervous system claim an undue proportion of the vital energies, and in whom fullness of the internal organs is not unfrequent. It is met with as an accompaniment of acne, or blotched face.

Treatment.—The skin must be stimulated gently; rub gently with soap; then wash well; then rub briskly with a rough towel, until the skin begins to glow. This to be done twice a day.

A red, patchy state ensues at first; but it speedily passes away.

Cold bathing and sea bathing, and this lotion:

No. 138. Bichloride of mercury (corrosive sublimate)	2 gr.
Eau de Cologne.....	2 oz.
Distilled water	6 oz.

or the same quantity of the bichloride to half a pint of emulsion of bitter almonds.

There are other sebaceous accumulations, forming swellings, more or less large, and out of some of them a horny matter would exude.

The treatment may be collected from what has been already said.

ACNE, OR COPPER NOSE.

This is a chronic inflammation of the sebaceous glands, and of their excretory hair follicles. There is an eruption of hard, conical elevations, distinct from each other, of moderate size, and more or less red. The tops become yellow and burst, while the bases remain in an indolent state for some time before they finally disappear.

This prevails during the middle period of life, up to old age. It may be developed on all parts of the body; but is more frequent where the skin is thickest, and where the parts are exposed to the air.

Acne is divided into a simple form and a rosaceous form.

The primary form is a hard, red pimple, most commonly on nose, cheeks, temples, and forehead; also on back, the neck, and shoulders. The rosaceous form is most frequently met with in old persons, especially females, and its common seat is nose and cheeks. The color is a rosy tint; but this changes to a violet,

In extreme cases, the veins enlarge, and the skin around becomes hardened. One kind of acne is called pointed, or spotted, from a small black point which forms at the top of each pimple.

The indurated and rosy kinds of acne are not susceptible of cure, but may be much alleviated.

Causes.—Hereditary tendency, indigestion, excess in eating or drinking, disorders of the womb, change of life, irritating substances to the skin.

Treatment.—In young and full-blooded people, lower the diet, avoid all stimulants, give gentle aperients—lotions of spirit, or sugar of lead.

In the indurated kind, rub with an ointment.

No. 139. Iodide of sulphur.....	20 grs.
Lard.....	1 oz.

or with a paste made of sulphur and milk.

We may apply dilute acids or caustic to the eruption, or a lotion consisting of two grains of bicyanuret of mercury to an ounce of distilled water. Apply by camel-hair pencil, and wash off with cold water.

Alterative medicines may be given—two or three grains of blue pill; one every night, for a few nights.

A drop of creosote in a draught of one ounce of water and one drachm of mucilage, three times a day.

In the rosaceous form, still more care as to diet, and abstinence from spirits, avoidance of hot fires, heated rooms, and mental excitement. For local applications, the vapor douche, and the ointment of bicyanide of mercury.

SYCOSIS, OR BARBER'S ITCH.

Redness, or itching, heat, and distension of the skin of the chin, lower jaw, or upper lip, which are followed by an eruption of small red points, which, in two or three days, ripen into distinct pointed pustules, each traversed by a single hair.

In five or six days these pustules burst, discharge their contents, a yellowish fluid, not mixed with sebaceous matter, as in acne, and form thin brown scabs, which fall off, and are sometimes not renewed. The disease terminates in from ten days to a fortnight, but successive crops may appear for a long time.

A smarting pain attends the eruption; the beard falls off; and,

in long-standing cases, the skin of the parts is covered with a tubercle, or hard, red elevation of the skin.

Causes.—The male sex; youth, spring and autumn predisposes; while any irritants, heat, neglect of cleanliness will excite it.

Cooks, founders, and smiths are subject.

Treatment.—Poultices are best; or warm fomentations, gentle aperients, and diluent drinks; but if the disease is severe, we must lower the food, and keep the bowels more open. Every hair must be cut off singly with flat curved scissors; and if they are loose, pull them out.

Poultices of marshmallow root and potato flour laid on tepid. In obstinate cases, a more healthy blood must be formed, and chalybeates given.

No. 140. Citrate of iron..... $\frac{1}{2}$ dr.=30 grs.
 Infusion of calumba..... 6 oz.

A sixth part twice or thrice a day, with occasional aperients.

THE HAIR—BALDNESS.

Baldness may arise from defective development of the formative pulps of the hair, or defective circulation in them, or defective nutrition of them, or from disturbed circulation in the hair bulbs; and the causes are, hereditary tendency, acute diseases preceding, certain diseases of the skin, mercury, syphilis, coffee taken in excess, late hours, abuse of pleasure, and old age.

The hair may fall off when the vital powers are directed especially to one part of the body, as in some diseases—during pregnancy, after very active purgation, in rheumatism and gout, and in consumption.

Baldness is much modified by sex; females are less subject than males, probably because there is more fat under the skin in them than in men. The scalp of bald persons is very thin, and eunuchs, who are generally fat, have remarkably long and permanent hair. It is well said that the very hairs of our heads are numbered; and no application can cause one more hair to grow than we are born to have, any more than we could cause an additional finger to grow.

Treatment.—We must try to stimulate the circulation on the scalp. The head should be washed every morning with soap, and dried with a rough towel; then brushing it with a hard hair-brush

until redness is produced; then a stimulating application should be rubbed in for about five minutes.

Hair Embrocation.

No. 141.	Eau de Cologne.....	2 oz.	
	Tincture of cantharides.....	2 drs.	
	Oil of rosemary.....	} of each	10 drops.
	Oil of lavender.....		

Or this pomatum of Dupuytren's :

No. 142.	Purified beef marrow.....	1 oz.	
	Acetate of lead (sugar of lead).....	1 dr.	
	Peruvian balsam.....	3 drs.	
	Alcohol.....	1 oz.	
	Tincture of cantharides, cloves, and canella.....	} of each	15 drops.
	Mix.		

Gibert recommends this :

No. 143.	Purified marrow.....	6 drs.
	Oil of sweet almonds.....	2 oz.
	Powder of red bark.....	1 dr.
	Mix.	

Repeated shaving is of service, the object of which is to confine the nutritive fluids to the formative structure of the pulp, till it shall be strong enough to form hair of a proper size and strength.

Whatever may be wrong in the system must be corrected; so, if there is debility, tonics; and if indigestion exists, the proper remedies must be resorted to.

Where it is desired to get rid of superfluous hair, the following depilatory ointment may be tried :

No. 144.	Slaked lime.....	2 drachms.
	Subcarbonate of potash.....	2 drachms.
	Hog's lard.....	2 oz.
	Mix.	

Or this powder :

No. 145.	Lime.....	1 oz.
	Subcarbonate of soda.....	2 oz.
	Charcoal in powder.....	1 dr.
	Mix.	

JAUNDICE, OR ICTERUS.

Languor and inactivity, with loss of appetite, are the first symptoms; then probably there is a bitter taste in the mouth; a sense of uneasiness or pain in the right side, over the liver; the white

of the eye and the whole surface of the body become of a yellow color, and the yellowness sometimes deepens into a green color. This is called green jaundice; the urine is high colored, and tinges linen dipped into it yellow; there is nausea, perhaps vomiting; there may be obstinate costiveness, or the reverse state of looseness; but the stools are of a clay color, though they may be high-colored. In some rare cases, the sweat and saliva are yellow, and objects seen by the patient are tinged of a yellow color; the pulse is slow, unless there are local pain and constitutional disturbance, when it is quick; and the skin will be hot and dry. In all the cases I have met with, there was an itching of the skin.

It is generally believed that the various modifications to which the secretion of bile is subject have a powerful influence in impairing the digestive functions, and such modifications have given rise to the very popular term bilious disorders. This convenient term has been loosely applied, even by medical men themselves. Some apply it to those diseases of the digestive organs which are attended with an excess of bile; others, again, to those in which there is a deficiency of bile, or an impure state of it; and many, under this term, comprise all derangements of the digestion, which are attended with any form of biliary derangement. To crown the misapplication of terms, impaired digestion and impaired biliary secretion are used synonymously, as if the secretion of the bile was the only condition upon which digestion depends.

The secretion of bile may be diminished or too copious, or it may be rendered impure, or it may be impeded in its course.

The only evidence of diminution in this secretion, where there is no evidence of mechanical obstruction, is that the stools are, more or less, pale, or are of a dull white or ash color. This is considered to arise from torpor of the liver, yet many cases are on record of suspension or diminution of bile secretion, where the liver has shown, *post-mortem*, no evidence of disease, and where the bile ducts have been empty. It has been supposed, to account for this, that the elements of the bile have not been separated from the bile, in the same way as the urine has not been secreted in suppression of the urine. In the former case, bile; in the latter, urea, has been detected in the blood—both these acting as a poison, and giving rise to coma and similar head symptoms. Of excess of bile, we can show no incontestible evidence; for a small quantity of bile may so color the evacuations by stool as to resemble copious biliary

motions ; yet, after death, evidence enough has been obtained in the diseased alterations of the liver. When jaundice occurs, while there seems to be plenty of the bile in the stools, an excess is deduced from those circumstances to exist.

Vitiated biliary secretion may exist, and has been proved to do so, but there are no evidences during life.

An impeded secretion does at times exist, there is no doubt ; and then the bile is reabsorbed into the system and gives rise to jaundice.

Dark or black stools have been considered to indicate an excess of bile—yet these may arise from a diseased irritation of the mucous membrane of the bowels—so, likewise, green stools are considered to be bilious—yet, they too, depend more probably on diseased secretions thrown out from the irritated mucous membrane of the bowels ; but when the stools exhibit a white color, it is generally in connection with jaundice, and may be considered as evidence of obstruction to the passage of the bile, and of its reabsorption into the blood.

Where white stools have been observed, without the occurrence of jaundice, we may presume that the blood itself is deficient in the biliary principles ; for, if they depended on functional derangement of the liver, the bile would be reabsorbed, and so give rise to jaundice.

Refer to the First Section—article SECRETION—where the causes of bilious headache, etc., are discussed.

Causes.—Any kind of pressure upon the excretory tubes that convey the bile from the liver to the bowel ; or these tubes, or ducts, may be obstructed within, as in the case of gall stones. Pregnancy is a cause ; but then the jaundice disappears after delivery ; newly-born children suffer. Jaundice may be an accompaniment of inflammation of the liver, acute or chronic ; mental emotions are not unfrequently a cause. A high temperature, too, may give rise to jaundice in those who go to live in warm climates. This effect of a high temperature has been explained by some, who suppose that it depends upon a sympathy between the extreme vessels of the skin and those of the vessel which forms the bile (the vena porta) ; others suppose it to depend upon a connection between the liver and lungs, which enables one of these organs to perform in part the functions of the other. It has been found that the quantity of carbonic acid gas formed during the

breathing, and expelled at every breath, is diminished by a high temperature, and by circumstances which lower the powers of life. Now, the excess of carbon must be carried off by some other channel than the lungs; and as bile is chiefly formed of carbon and hydrogen, an increased secretion of bile must guard the system against the superabundance of the carbonic acid gas. Hence the increased flow of bile in hot climates; and hence the cause of jaundice arising from the depressing passions, fatigue, stimulating drinks, etc., which may act by diminishing the quantity of carbonic acid gas formed in healthy respiration.

Treatment.—Leaving gall stones to be treated of hereafter, we should, in treating cases of jaundice, endeavor 1st, to diminish the secretion of bile when excessive; 2d, to increase it when deficient; 3d, to correct it when vitiated, and 4th, to promote the excretion of the bile, and to remove or relax spasm.

Now, the first indication can only be done by avoiding causes; that is, high temperatures, and by diminishing the quantity of animal food. If an irritable state of the bowels be present, and should be irritating the liver to undue secretion, this state must first be removed.

The second indication is effected by mercury, upon which medical men depend to a certain extent, except in cases of gall stones, some thinking it acts as a specific on the liver, others, merely as a purgative. Mercury may be given often, and in small quantities, so as to touch gently the gums and mouth, or it may be given in large, purgative doses.

If any symptoms of inflammation of liver, either sub-acute or chronic, remain or are present, cupping or leeches to the right side, where pain or uneasiness may be complained of, then 4 or 6 grains of calomel, with 8 or 10 of jalap, may be given at night, and worked off next morning with salts and senna draught. Then small doses, either of calomel, 1 grain, or of mercury and chalk-powder 4 grains; every night, or night and morning, for some time, but, watch so as not to salivate. If mercury seem to disagree by exciting thirst or feverish symptoms—then

No. 146. Socotrine aloes.....	3 grs.
Hard soap.....	6 grs.

Make two pills; to be taken night and morning. If no signs of feverishness exist, we may give

- No. 147. Compound infusion of gentian..... $1\frac{1}{2}$ oz.
 Sub-carbonate of soda..... 15 grs. to 20 grs.

thrice daily; and if much depression of spirits attend, add 15 to 20 drops of sal volatile.

Aloes is an excellent remedy in jaundice and in torpor of bowels from deficient bile, and it may be combined with taraxacum, with quinine, etc., according to circumstances.

The temporary defect of bile may be supplied by various bitters, occasionally united with rhubarb, aloes, and the like.

I have often prescribed this :

- No. 148. Watery extract of aloes..... 10 grs.
 Dandelion..... 2 drs.
 Mint, or peppermint-water..... 6 oz.

A table-spoonful every four hours.

Dandelion, or taraxacum, is very useful, when there is no stomach disease co-existent.

- No. 149. Bruised dandelion..... 4 oz.
 Distilled water..... $1\frac{1}{2}$ pints.

Boil to a pint.

Of this, 2 oz. may be given two or three times a day, with cream of tartar, 1 drachm, if the bowels are very sluggish; if they are not, the bicarbonate, or carbonate of potash or of soda, 20 to 30 grains, instead of the cream of tartar.

These medicines are also well adapted to correct a vitiated secretion of bile; as far as we know at the present of its morbid conditions.

As to the 4th, that of relaxing spasm, opium is the chief, if not the only remedy; but when the bowels continue costive, an emetic or two has often, by exciting the action of the muscles of the belly, etc., caused bile to flow into the bowel, when it would soon pass away by the bowels, or be made to pass away by any aperient.

GALL STONES

may be formed of thickened bile—being secreted too thick—or being detained in the bile ducts; but gall stones may consist of what is called cholesterine, or of resinous matter, or of what is called picromel.

Now, when gall stones are composed of such elements, we can only suppose that the cholesterine, etc., are contained in excess

in the bile, or else, there is a deficiency in the bile of the element, on which the solution of the cholesterine depends.

Gall stones may form in all parts of the biliary passages, but they all find their way to the bile ducts or to the gall bladder—where they grow larger—and if they are situated either in the duct of the gall bladder, bile may flow into the bowels; but once fixed in the bile duct, which is common to the liver and gall bladder, a stoppage of bile must ensue, and jaundice.

These gall stones cause some painful symptoms as they pass along, though they have been formed in numbers, and remained in the gall bladder unknown and unfelt, and have only been discovered after death.

Sometimes they occasion a dull pain, increased on motion or after taking food; but the pain attending the passage of a gall stone is often intense. It is usually seated in the pit of the stomach, extending to the back and the right side. The pains are like labor-pains, and intervals of comparative ease succeed the fits of pain; but there remains a dull pain.

This pain may be a mark of inflammation; but then we should have fever and accelerated pulse, as well as tenderness on pressure, whereas pressure mitigates, so that the sufferer applies his hand to his stomach or rests his belly upon some hard substance.

According to Dr. Pemberton, the more exquisite the pain, provided the pulse is below 100 in the minute, so much the more confident we may be of gall stones being in the act of passing. After a time, vomiting usually comes on; then we shall have tenderness of the belly on pressure.

The pulse is even slower than natural sometimes—generally unaffected; shiverings, or rigors, as they are called, may set in, just as shiverings, at times, accompany the passage of a bougie up the urethra.

When a large stone has once forced its way through the ducts, others pass more easily, and quantities are often got rid of easily enough.

Sometimes a large concretion sticks in the bowels somewhere, and may give rise to serious symptoms. (See ILEUS and INFLAMMATION OF THE BOWELS.) But as they pass out with the stools, we should look for them in the evacuations, by mixing the stool with water, upon the surface of which any gall stones will most probably float, since they are lighter than water. They will not,

however, float, after having been soaked for some time, and they do not always float when fresh from the gall bladder. We should, therefore, examine as early as possible, both for floating concretions, and for others, by pouring the fluid, etc., carefully off.

These stones form most readily in corpulent persons, of sedentary habits, who eat and drink well, sleep much, and neglect their bowels.

Cattle, when shut up in stalls, are said to be subject to gall stones, and to lose the complaint when turned out to grass; hence Van Swieten deemed grass to be a good remedy for jaundice. Cattle shut up will not thus suffer, if they are carefully rubbed, as a horse is groomed, whereby the skin is kept in a good state.

Gall stones collect in great numbers sometimes; and Dr. T. Watson tells us he has heard of an instance in which upward of 1,300 gall stones were taken from a human gall bladder after death.

Treatment of gall stones.—What we want to effect here is, to get rid of the mechanical impediment to their passage out, and also to ease suffering.

Should pain at pit of stomach become tenderness, leeches or blood-letting. Our sheet-anchor, both in relieving spasm and pain together, is opium, in full doses.

Those who are sufferers from gall stones should have constantly by them pills containing one grain of pure opium in each; one to be taken as soon as pain comes on, and repeated once or twice in the course of two hours, if the pain require, and much more may be safely given, and is necessary. Pills are less likely to be rejected than draughts; but neither pill nor draught can always be borne; then opium, in injection—thirty drops of laudanum in a small quantity of warm gruel, and repeated when necessary.

The warm bath is indispensable almost; but if it can not be procured, warm fomentations, mustard poultices, or the warm turpentine folds of linen, are to be applied.

One or two drachms of the carbonate of soda to a pint of hot water, and large draughts of it taken, will procure alleviation at times, the alkali controlling acidity, and the hot water acting as a fomentation. With these draughts opium may be combined.

As soon as the pain is quelled, clear the bowels by aperients.

To prevent the formation of these concretions, we must prevent indulgence or exposure to the causes favoring their formation. Corpulency must be combated (see CORPULENCY), luxurious or

sedentary habits given up; the patient should eat and sleep less, and walk or ride more.

It is believed that the continued use of alkalies renders the bile less disposed to concrete; so they may be given—twenty or thirty drops of liquor of potash in some bitter infusion. But one remedy has been much extolled; it is this:

No. 150. Sulphuric ether.....	$\frac{1}{2}$ oz.
Spirits of turpentine.....	$1\frac{1}{2}$ oz.

Begin with forty drops, and increase gradually—taken in water. As ether is a solvent of cholesterine, this remedy may benefit.

In some bad cases of pain from gall stones passing, when the warm bath and opiates had failed, I have succeeded with a tobacco injection, about twelve grains to four ounces or six ounces of water, or of gruel. It requires to be watched, on account of the great depression which tobacco, so administered, will produce in some constitutions; but with brandy, ammonia, or ether, at hand, it is well worth while to try the remedy. In cases where spasm may be supposed to exist in the bile ducts, it has appeared a superior remedy to opium.

If jaundice have followed after an injudicious suppression of any discharge, or of bleeding from piles, we must, in the latter case, apply leeches near to the lower bowel, so as to unload the surcharged great veins in the belly.

If there is much debility, give these pills:

No. 151. Extract of aloes (watery extract) }	} of each 20 grs.
Sulphate of quinine	

Make into twenty pills; one, two, or three, three times a day.

NIGHT BLINDNESS—NYCTALOPIA.

Here the sight is perfectly clear and distinct in the daytime; but a total blindness takes place by night.

It is symptomatic of disorder of the digestive organs—of the liver especially—and is peculiar to tropical climates.

Repeated blisters to temples, a green silk blind over the eyes to be worn, and intense light avoided. Wash the eyes, several times a day, with cold water or an eye-wash, or collyrium:

No. 152. Sulphate of zinc.....	10 grs.
Rose water.....	4 oz.

DEAFNESS—(DEAF AND DUMB)—

depends on many causes—some capable of removal, others not so. Deafness sometimes depends on hardened wax in the outer ear-passage. This deafness is usually accompanied with noises, as of singing, etc., in the organ. To remove it, drop a small quantity of warm oil, olive or almond, into the ear, for two or three successive nights, and then syringe well with warm water, by means of a two-ounce syringe.

Other kinds of deafness must be treated by a professional man. Dumbness proceeds from deafness, either existing from birth, or arising early in life. It rarely happens that dumbness is entailed by deafness so late as the tenth year. In the deafness from birth, sounds can never be associated with ideas; in deafness coming on later in life, even if speech shall already have been acquired, it may gradually be lost in consequence of the want of habit to associate sound with speech.

CANINE APPETITE—BULIMIA.

This is a craving for food beyond the natural wants of the system, sometimes excessive in degree.

The quantities of food, etc., taken in some cases are almost incredible. In one case, a French prisoner consumed, in one day, four pounds of raw cow's udder, ten pounds of raw beef, and two pounds of candles, with five bottles of porter. In another, the patient would eat any thing—the refuse of the kitchen, rejected matters, or corrupted meats; he was obliged even to be driven from the dead room. This unfortunate and miserable man ultimately died of consumption.

In this disease the coats of the stomach are morbidly irritable; its nerves morbidly sensible, and its muscular coat especially irritable, so as to move away the contents of the stomach in a very short time. It has been divided into the bulimia of gluttons; into that of excessive appetite from exhaustion after diseases, discharges, etc., and into voracious appetite, followed by vomiting.

Usually three or four large stools are passed daily; a nauseous smell emanates from the body, and sometimes there are excessive perspirations.

Treatment.—The glutton can only be cured by a fit of illness—

and not always then. He must employ his mind and body more, that he may abuse his stomach less.

In the second kind, or that which results from exhaustion after disease, we must watch; for no general rules can be laid down; and in the third, nauseating purgatives have done good service—namely, castor-oil, with the oil of turpentine, and the tartar emetic or croton-oil liniment rubbed into the pit of the stomach. The patient must abstain from food to a considerable extent; great distress from hunger will be felt for a few days, which will subside. Dr. Crane gave portable soup, made into pills, for several weeks, and recovery followed.

Opiates, or very small quantities of tobacco, will help the patient to support better the hunger than he otherwise could do. Some swallow balls made of a calcareous powder and of tobacco, to still the hunger and distress from fasting.

RUMINATION.

This is regurgitation of food which had passed into the stomach, and which is remasticated, and again swallowed, much like a cow chewing her cud.

A good many instances are on record of this affection, and the second mastication seemed to be far from unpleasant. Anthony Recchi, who was a human ruminant, said of the second mastication: "Indeed, it is sweeter than honey, and accompanied with a more delightful relish." Human rumination is an involuntary act; yet the act can be hastened or suspended, for a certain time, by the individual.

It arises from insufficiently masticated and insalivated food, which irritates the stomach to a retrograde action, and this is combined with a distended stomach. There is probably debility with increased organic sensibility of the stomach. The treatment is that of indigestion.

COSTIVENESS—OBSTIPATIO.

This is said to proceed, in most cases, from a torpid state of one of the larger bowels (the colon). There is a deficiency of contractile power, and the fecal matters are detained in the bowel, giving rise to other symptoms.

This weakness of the bowel may be caused or accompanied by

exhausting discharges, or whatever may have debilitated the general system.

But when once this bowel, the colon, has become habituated to distension, its coats give way, and the diameter of the bowel enlarges to an extreme degree in some cases.

The feculent matter may be retained in the bowel for varying periods ; and cases are on record where a fecal evacuation would take place once only in two or three weeks, yet no apparent suffering ensue.

Dr. Baillie published a case which continued fifteen weeks ; and instances of constipation for three, four, five, seven, eight and nine months have been recorded. One person, a young female, never had more than one evacuation every two months, during five years, and enjoyed good health.

In these cases, the appetite has usually been wanting more or less, or there has been increased evacuation by the skin or the kidneys.

Some of the most healthy persons are subject to costiveness, because an active absorption of the fluid part of the remainder of the food goes on in the colon, but costiveness may be caused by the very reverse state, of debility, in which the propelling power is defective.

Causes.—Sedentary life and habits, indigestible food and improper drinks, as imperfectly prepared bread, new cheese, nuts, cucumbers, and others ; too much sleep, and too much bed ; by prolonged suckling ; too much mental or physical exertion ; tumors pressing, and various lesions of structure ; rupture.

Symptoms—vary much in different individuals, but generally the countenance and skin are foul and unhealthy ; the perspiration thick, clammy, bad smelling ; breath offensive ; tongue loaded or furred ; lips and gums pale ; imperfect or fanciful appetite ; digestion impeded ; the belly, which should always be closely examined, will be found swollen, doughy, and inelastic ; headache ; urine loaded ; evacuations take place, and they are slimy, very dark, or otherwise discolored, scanty, and offensive ; the pulse soft and weak, sometimes slow, at others quick.

In the female, there may be a tendency to fainting, flabby state of the flesh, swelling of ankles, languor, lassitude, and pains in loins or belly, or much of the fecal matter may be retained, and yet there may be daily evacuations. The refuse matter, mixed up

with the secretions of the bowels, lodges in the cells of the colon, through the center of which a passage is made; and it would seem as if there was nothing retained, yet the cells of the colon may be full of hardened feces, only with a small central passage through them; the bowel becomes more and more distended, and the evil goes on increasing. The stools may be liquid, or mixed with lumps, or slimy, of a dark-green or brownish-black hue, very offensive; and griping, bearing down, or a scalding sensation, accompany the ejection of these irritating materials from the bowels.

Windy distension of the bowels is almost an invariable accompaniment, and adds to the distress.

Treatment.—Purgatives give immediate relief, but unfortunately the bowels return to their former state, and nothing short of continual purgatives will meet the case; it becomes, therefore, urgently necessary to try some other means.

This is sometimes effectually and always most pleasantly effected by diet; a change in diet will at times suffice. The bread should be the brown bread, with more or less of the bran in it, and this coarser bread is, of all agents, the most effectual. (For a fuller detail, refer to DIET and FOOD.)

The accumulation in the bowels must be first got rid of. Aperients, both by mouth and injection, must be administered. We may give:

No. 153. Compound decoction of aloes	} of each, 1 oz.
Infusion of senna.....	
Tincture of jalap.....	

Or a blue pill, three grains, and compound extract of colocynth, three grains, in two pills, at night, and a dose of salts and senna next morning. If necessary, this latter may be repeated. Where active purgatives like these fail, a drop of croton oil in half an ounce of castor-oil, will succeed.

These should not be given if there is tenderness over the part, with full, perhaps hard pulse; then blisters, hot fomentations, or leeches, or even blood-letting from the arm.

Clysters will often prove of great service, but should never be solely relied on. These only wash out a few inches of the lower bowel, unless a long pipe, say 18 inches, can be introduced, and no one but a medical man should attempt to do this. Some of our fellow-countrymen, who have been students at foreign universities, have seen cases where patients have had one or two daily clysters

thrown up, yet the bowels have, after death, been found quite crammed with feculent matter.

STRICTURE OF COLON, OR RECTUM.

In some cases, a stricture or mechanical impediment in the lower part of the colon has existed. Here it is obvious that nothing but mechanical dilatation will do good. Then a rectum bougie should be gently introduced at certain times, but this none other than medical men should attempt.

The symptoms in such a case would be an urgent desire to go to the water-closet; yet, after severe straining efforts, nothing but wind, and a little slimy mucus, with perhaps some blood intermixed, are expelled. Here, active forcing purgatives will do mischief.

Some take a dinner pill, as it is called:

No. 154. Socotrine aloes, powdered..... 3 drs.
Mastich, finely powdered..... 1 dr.

Mix well together; much depends on thorough admixture. Then add, of syrup of ginger, enough to make sixty pills. One or two of these to be taken an hour every day before dinner, or every other day.

But in tolerably healthy vigorous habits, the author gives the following:

No. 155. Wine of seeds of colchicum (meadow } $\frac{1}{2}$ oz.
 saffron)..... }
Liquor of potash..... 2 drs.
Tincture of gentian..... 6 drs.
Mix.

Dose, sixty drops, or a tea-spoonful every night and morning, until the motions become of a soft consistence; then a seidlitz powder, or four grains of compound extract of colocynth, will remove the mass. These drops act indirectly upon the bile ducts, and so imitate nature's operations. But these drops should be discontinued if they seem to disagree, by causing deadly languor or sickness, or very loose stools.

Cold-water douche to the belly, standing on cold floor, etc. In extreme cases, where there is no mechanical impediment, the tobacco clyster must be tried.

The treatment for indigestion and flatulence may be referred to; the tonic infusions with carbonates of potash or of soda—diligent

frictions with the flesh-brush to belly, and when the belly is very much distended, a bandage should be worn, to give tone and stimulate to contraction.

NERVOUS BLINDNESS—GUTTA SERENA: AMAUROSIS.

Blindness—partial or complete, in one or both eyes. A peculiar gait marks the walking movements, which latter are uncertain.

There is a characteristic stare—the pupils are fixed or oscillating, and insensible to light.

Treatment.—This must depend on the cause. If there is organic disease of the brain, we must act accordingly.

But in many cases there is not much hope of cure; still, where it depends on hysteria, or irritations in stomach and bowels, we may hope for restoration of sight.

To the non-professional person, we would recommend repeated blistering behind the temples, and, where it can be borne, the blistered surface should be kept open by means of savin cerate, and small doses of calomel may be tried, until the gums begin to swell.

INCONTINENCE, OR IMMODERATE FLOW OF URINE—ENURESIS.

This may arise from mechanical causes, or from derangements of the bladder.

The urine is expelled from the bladder by the muscular coat, and it is retained in the bladder by a circular set of fibers which surround the neck of the bladder. Now, the muscular coat may be forced into undue action, or the sphincter (circular) muscle may be deficient in action, or palsied even.

In either case, the urine may flow immoderately. Where the first state exists, there will be evidence of local irritation; symptoms of stone in the bladder, of a chronic inflammation, or of spasm show themselves. Here give opium in the shape of clyster or suppository. (See GLOSSARY.) A grain of opium, with two or three grains of soap, makes a good suppository; for a clyster, thirty drops of tincture of opium, in three or four ounces of starch, will relieve the state of spasm. Besides these, warm bath, hip bath, cupping to the loins, and very gentle aperients, so that there need be no straining at stool.

In the other kind, in which there is frequent making water dur-

ing the day, and an involuntary discharge at night, we must give two or three drops of tincture of cantharides, with ten drops of tincture of henbane, and increase gradually and cautiously. These doses are for children, who are frequently affected. For grown-up persons, begin with twelve drops of tincture of cantharides, every six hours—increased to twenty—for a few days, which will cure. When signs of strangury come on, discontinue the tincture of cantharides. (For signs of strangury, see next disease.)

Children should be made to lie on their sides at night, and not on their backs, for, in the latter position, the urine lies in a triangular space of the bladder, which is peculiarly sensible and irritable. In some, doses of thirty drops of tincture of muriated iron, three times daily, have cured.

The urine is perfectly retained during the day, and voided only at night; habit has more to do with the matter than debility of the circular muscle. Here we must make the children leave the bed about midnight for the purpose of emptying the bladder; no liquid should be drank in the evening, or for some time before going to bed. It has been necessary to threaten punishment.

The urethra, or passage, has to be kept closed in boys or men, by a bit of bougie, etc., tied round it before going to bed, and the bladder should be emptied the last moment.

DIFFICULTY IN VOIDING URINE—STRANGURY: DYSURY.

The term dysury comprises an arrest of the flow of urine, for a shorter or longer time, and a complete retention of it, with pain at the time, and, in some cases, the pain is severe.

Causes.—The urine may have been retained too long, and so have become irritating as it passes, and a spasm arises which stops the flow; or the bladder may be in an irritated or slightly inflamed state; inflammation or swelling in the neighborhood of the bladder, as from piles, worms, and hardened feces or stools.

Strangury means an intense degree of dysury, and may be produced by cantharides, corrosive sublimate, fox-glove, in large doses, or other irritant matters. Stricture of the passage is a frequent cause; and hysteria will cause it.

Treatment.—This will obviously depend on the cause. Mechanical impediments must be removed; hardened feces cleared away by an active purgative, or by clysters.

The urine itself must be diluted by copious draughts of barley-water, in which some sweet spirits of niter have been introduced; or draughts of bicarbonate of potash or of soda, thirty grains of either; or thirty drops of liquor of potash. But warm fomentations, and, still better, a warm bath, or hip bath, will relieve.

The liniment of the extract of belladonna, half a drachm, in soap liniment, one ounce and a-half, rubbed into the perinæum. Others praise the tincture of muriated iron.

SUPPRESSION OF THE URINE—ISCHURIA.

Here no urine is voided, because its secretion is suppressed. It differs from retention of urine, in which the urine is retained in the bladder; in retention the urine is secreted in the kidney, but retained in the bladder.

This is usually a serious and fatal disease. It occurs in persons advanced in life, and corpulent. Retention may lead to serious consequences likewise. In one case, a female, who had no opportunity of voiding urine for some time, found she could not do so at last, and a rupture took place in the passage, which could never be healed. And if the urine is too long retained, and no operation is resorted to, to open the bladder, similar symptoms to those which terminate suppression will ensue.

In suppression, there may or may not be any pain or weight in the loins, or distension in the belly. No urine may have passed for some time, a day or more, and, on trying by an instrument, none will be found in the bladder. Then nausea comes on, with languor and heaviness; the pulse, at first slow, becomes excited, the skin hot, the features hot, etc. Then drowsiness steals on, generally by the third day; the features become puffy, the ankles swelled. The drowsiness lapses into coma about the fourth day, and death, with or without convulsions, follows in two or three more. In some instances, the urine may be diminished daily, till complete suppression is developed.

Causes.—Preëxisting disease of the kidney; cold and wet.

Treatment.—Where there are no signs of disease of the kidney, blood-letting; Dover's powder, five grains, with twenty grains of carbonate of potash. The warm bath is useful. Purgatives may be tried.

As soon as coma sets in, there is no hope; for this coma is one

of the signs of a poisoning of the blood, by the urea it contains, which urea ought to be sent out of the blood and the body, through the kidneys.

GRANULAR DISEASE OF THE KIDNEY, OR BRIGHT'S DISEASE.

We have described inflammation of the kidney; in some scrofulous constitutions, it may be followed by this disease. Nearly forty years ago, discovery was made of the connection between dropsical affections and this peculiar disease, in which a yellowish, grain-like matter is deposited in the substance of the kidney, causing a wasting away of certain parts of its texture, and a dropsy, which may be called renal.

There is an acute and a chronic form, and its course may be slow or rapid.

Symptoms are shiverings, ushering in fever; the urine is scanty, almost suppressed, occasionally bloody, and passed with difficulty. It contains albumen, as a distinguishing sign. Albumen is familiarly known to us, in the white of the egg. It will pass, when undiluted, from the fluid to the solid state, when heated to 160° of Fahrenheit; when diluted, a heat of 212° becomes necessary.

Heat then affords us the means of testing for albumen. This may be done in a spoon, but most conveniently in a glass tube, heated by means of a spirit lamp.

As there may be mucus in the urine, we should first filter it. There may be so much albumen in the urine, that the whole of it becomes solid. Usually a whitish cloud appears, which collects into flakes, which subside after a time.

Heat is not, however, a conclusive test. When recently discharged, the urine may be neutral, or even alkaline; or, it may become so after it has left the bladder. Now, this alkaline, or neutral urine, will not coagulate when heated, not even when it is full of albumen.

We then test the urine by dropping in some nitric acid, which has the property of precipitating albumen in a flaky or pulpy form. We should test the urine, then, by first boiling it, and then dropping in nitric acid.

To continue the symptoms—there will be pain in the loins, shooting down to the groin; pain across the pit of the stomach, felt or increased on pressure, and attended with nausea and vomiting.

Anasarca or dropsy of the cellular membrane makes its appearance on the second, or even first day, sometimes. If the disease be not checked by active treatment, we may have some internal inflammation, as in the chest. Frequently it ends in coma or stupor.

The chronic form may follow on the acute, but more commonly it commences obscurely and insidiously, and the only invariable character is scanty, highly coagulable urine, with more or less of fever; and these symptoms may prevail alone for a few days, till coma and convulsions supervene. Frequent making water, and increasing debility, obscure pains in the loins; the urine may be scanty or the contrary, and its color is pale, sometimes cherry red or brown, often muddy, and coagulating more or less by the action of heat and nitric acid. This state may go on for months, or even a year or two, when the strength is reduced more and more; the body is more or less reduced in flesh, the skin dingy or waxy pale, and dry, with drowsiness, sickness and retching.

Dropsy, diarrhea, rheumatism, catarrh, diseased heart, and coma follow. The essential characters are, reduced density of the urine, with diminutions of its solids, and reduction of the coloring matter of the blood. The urine may or may not be coagulable, for although albumen is very generally present, it is not invariably so.

Causes—are obscure. Intemperance, the scrofulous habit, and scarlet fever predispose; the first two influence somewhat powerfully. Mercury, cantharides, or certain articles of diet, cheese, puddings, pastry, will cause albumen to appear in the urine.

No age is exempt, but it is most frequent between the ages of thirty and fifty.

The probability of recovery depends on the stage of the disease. Many have deemed it an incurable disease, but in its early stage, when the density of the urine is not much under the natural standard, and the blood still retains its due proportion of coloring matter, as shown by countenance and skin being of tolerably healthy color, recovery may be accomplished. But in advanced stages, when, besides the morbid deposit in the kidney, there is an atrophy or lessening of the structure of the kidney, there is no hope.

Treatment.—We must look to the primary disease, and then to the secondary complications.

In the acute primary disease, we must resort to blood-letting carried to faintness, or till the pulse is effected; then cupping or leeching to the loins.

Diminished local uneasiness, and less albumen in the urine testify to the benefit derived from these blood-lettings. But we must not push the evacuation of blood too far, as the blood soon becomes impoverished in this disease, wherefore, it is advisable to examine the blood, and ascertain the proportion of the blood globules.

The next point is, to induce perspiration, by five to eight grains of Dover's powder, thrice daily, and by a vapor or warm bath every evening, or oftener. James's powder, three grains may be substituted for the Dover's powder, and the acetate of ammonia is preferred by many. Laxatives are useful.

Diuretics, such as sweet spirits of niter or acetate of potash, thirty drops of the former, and thirty grains of the latter, are useful when there is dropsy; but diuretics are condemned by some as adding to the irritation in the kidney. It is not proved that they do increase the irritation, for they do not increase the albumen in the urine, which albumen is probably a test of the irritation existing in the kidney.

Mercurials must not be given, except as purgatives.

When the disease has been brought to a stand, then we must have warm clothing, with avoidance of cold or damp, also of spirituous liquors, or wine or malt liquors; give nutritious food in moderation, and use regular exercise.

These rules should be observed, and they, with warm baths at certain intervals, may effect further good, and prevent an attack or recurrence.

For the dropsy, diaphoretics, purgatives, and diuretics; and the first are best, if they will remove the dropsy; if they do not, as happens not uncommonly, then diuretics.

Give of foxglove, in powder, one or two grains, and in tincture, ten or fifteen drops, thrice a day; and of bitartrate of potash, one or two drachms, thrice daily. The decoction of broom-tops, too, is useful.

The fluid may be let out by acupuncture; that is, puncturing with needles.

Sweating medicines may be given with the diuretics.

For the indigestion, bitters and alkalies—soda or potash. For the vomiting, ether, brandy and ammonia. Blisters over the stomach, opium, and hydrocyanic acid or creosote, will alleviate the vomiting.

For diarrhea, opium, alternated with laxatives, or opium and

acetate of lead, one grain of opium to three of the lead, thrice daily.

To quench thirst, soda or potash water, with or without wine. Where internal inflammations arise, treat as in ordinary cases.

For rheumatism, tincture of meadow saffron and opium. Coma usually bids defiance to all modes of treatment, unless in the early stage; then blood-letting, brisk purgatives, and diuretics.

The attending diseases of the heart are most relieved by removing the dropsical accumulation.

INFLAMMATION OF THE KIDNEY, OR NEPHRITIS—GRAVEL AND STONE, OR LITHIASIS.

A fit of the gravel, as it is called, is attended with the following symptoms. But a fit of the gravel is only when a powder or concrete matter is passed with the urine. It is no fit of gravel when the urine is ejected clear, but throws down an earthy sediment as it cools, which redissolves when artificially heated.

Pain, dull, or it may be severe, in the loins, mostly on one side, and descending in the inside down toward the groin, numbness of the corresponding thigh, a drawing-up of the testicle, with pain in it, urine high colored, nausea and vomiting.

The pain is increased by firm pressure when there is inflammation, by cough or sneezing, and, in some cases, by that act of the breathing called expiration or breathing outward. The pain, too, is increased by straightening or stretching the limb on the affected side. The attitude preferred is that of inclining to the affected side, at the same time drawing up the limbs.

The urine may at first be bloody—coagulable by heat and by acids; after a time, it becomes pale, watery, not coagulable, and either neutral or alkaline; frequent desire to pass it, and there is dysuria, or difficulty in passing it, or it may be suppressed. When albumen is present, there is probably some degeneration of the kidney.

With these signs, fever attends; a full, hard pulse; tongue covered with a white fur, constipation, anxiety of countenance, and depression of spirits.

This pain must be distinguished from lumbago, and from nephralgia (a pain connected with the kidneys).

In lumbago, the pain shoots down to the back part of the thigh,

and not to the front of the body; nor is the urine disturbed, as in kidney inflammation. In lumbago, the pain is on both sides; in inflammation, the pain is on one side.

The pain in colic may be confounded with this inflammatory pain; but in colic, there are, at first, none of the fever symptoms above described; no full, hard pulse, nor white fur on tongue. (See COLIC.)

The numbness of the thigh and drawing up of the testicle are characteristic, too; but colic and pain is very often and may easily be mistaken for nephralgia, or pain caused by the passage of a stone from the kidney into the bladder.

The urine is first formed from the blood in the kidney, and from the kidney a small, very irritable tube, the ureter, conveys it into the bladder—consequently, a stone formed in the kidney follows the same course as the urine; that is, down the ureter into the bladder—giving rise to spasm and pain as it passes down. The ureter must not be confounded with the urethra, for the latter is the passage to convey the fluid from the bladder outward.

In some cases, the clinking of a small stone in the *pôt-de-chambre* is the only circumstance that convinces the patient of his suffering having proceeded from stone and not from colic. Inflammation of the kidney may, like other inflammations, terminate in resolution (recovery), or pus (matter) may be formed; or, in mortification, coma is a common symptom at the end of a fatal case.

Causes.—Calculi or gravel; acid diuretics; long-continued and violent exercise of the muscles of the back, as in horse exercise; hardened masses of excrement in the neighboring bowel. Gout may leave the external part upon which it had seized, and then attack the kidney.

Treatment of Inflamed Kidney.—Blood-letting from the arm, by cupping, and by many leeches to the loins.

Then give opiates, thirty or forty drops of the tincture directly after the blood-letting. This sometimes arrests the disease at once.

Castor-oil, and frequent soothing clysters.

For drinks, give barley-water, gum-water, decoctions of marsh-mallow, linseed tea, or even pure water, with a little niter in them. Warm hip baths, repeated when necessary; warm fomentations; opiate clysters, tincture of opium, thirty or forty drops to half a pint of starch.

In cases of long standing, embrocations, or an issue, or a seton,

perfect rest. The catheter to draw off the water, if necessary. Nephralgia, or kidney pain, may be discussed under the head of gravel or urinary stone.

GRAVEL.

Dull pains, or they may be acute, with a feeling of heat and of heaviness in the region of the loins; there is more or less pain in passing the water, with pain over the bladder, and irritation at its neck; itching or pain at the extremity of the yard. In some instances, the testicles are drawn upward, and the urine may be bloody, or there may be clots of blood in it.

The urine, just as it is expelled, and still warm, contains a sandy powder, or grains of sand or small stones, of a grayish or reddish-brown color. It is scanty, high-colored, acid, smells strongly, and becomes turbid on cooling.

With these the digestion is deranged; there is weight at pit of stomach, sourness of mouth, flatulence, constipation, furred tongue, restlessness, and other signs of irritation. The pain is apt to be increased by all sudden agitation of the body, such as running, leaping, and riding on horseback.

In order to understand the meaning of the terms acid urine, alkaline urine, our readers should know how to prepare and to use certain tests of acidity or alkalinity of the urine.

For acids, litmus paper is used. It may be made by saturating unsized paper (free from lime) in a strong infusion of litmus (about one ounce to half a pint of boiling water), and drying it in a place entirely free from acid vapors. If not of a good blue color, dip it a second time. It should be kept from air and light.

For alkalies, rose paper, made by saturating unsized paper two or three times in a strong infusion of red roses (about two ounces of the petals to a pint of water), and drying the paper quickly. This, too, should be kept from air and light, and in a dry situation.

Turmeric paper is also a test, which is changed from yellow to brown when the urine is alkaline; blue litmus and rose paper to red when the urine is acid.

Dr. B. Reid gives the following directions how to prepare test papers:

“Cut a common red cabbage into small pieces, and boil it, for a short time, with no more water than is required to cover it;

or, infuse the cabbage in boiling water. Dip into this solution a number of slips of paper, four or six inches square; let them be kept there till they have imbibed the color; then dry, and keep them from the light, except when used. Acid reddens these, alkali turns the color green.

“Litmus paper.”—Boil litmus in five or six times its bulk of water; slips of this color, dried, are reddened by acids, but not turned to a green by alkalies.

“Turmeric paper.”—Pour upon a table-spoonful of turmeric, placed upon a common plate, three or four times its bulk of boiling water. Put slips of paper in it; dry them; they are of a fine yellow color, become reddish-brown by alkalies, but are not affected by acids.”

The urine in health is never alkaline.

The gravel, or sand, may be divided into lithic gravel, or that composed of lithic acid and lithate of ammonia, and this is by far the most frequent form met with.

Next in frequency is the phosphatic gravel, where the deposit consists of phosphate of lime, or the phosphate of lime and magnesia, or of both combined; and another kind of gravel is the oxalic acid gravel, composed of the oxalate of lime.

In oxalic acid gravel there is less constitutional derangement, in the form of fever or indigestion, before the local symptoms show themselves.

If we have reason to suspect an unhealthy state of the urine, we should notice whether it be colorless, transparent, or turbid; we should ascertain, by litmus paper, whether the urine is acid, alkaline, or neutral—its specific weight or gravity; set it aside to see if it deposit sediment, or throw up a cream to the surface, or crystallize on the sides of the vessel. The urine examined should be just expelled; and if any discharges exist, which are likely to discolor it by admixture, the water should be drawn off, so as to have it without any admixture.

We may suppose the urates to be in excess when the urine is acid—when it deposits, on cooling, a red, pink, buff-colored, or white precipitate, covering the bottom of the vessel with an even powdery deposit, which deposit is usually copious, and is dissolved by heat. Uric acid urine is highly acid—deposits, on cooling, a red, pink, or buff-colored sediment, which adheres to the sides of the vessel in hard crystalline grains, having, by microscope, the

appearance of diamond-shaped plates or prisms; the precipitates are generally scanty.

When urine is acid, alkaline, or neutral, but turbid on emission, and deposits a white or yellowish sediment, and is not rendered transparent by heat, there will be present phosphates, oxalate of lime, cystine, mucus or pus, or blood. Now if the phosphates are present, the urine is rendered transparent by acetic acid; the phosphates appear as powders (not crystallized) by microscope. The phosphates are soluble in acetic and muriatic acids, and insoluble in liquor of potash. When the urine does not redden litmus paper, but turns it blue again when it has been reddened by a weak acid, or when the urine is so alkaline as to turn turmeric paper brown, we may conclude that a case of the phosphatic gravel, or tendency, is before us.

If oxalate of lime, the urine is not affected by acetic acid or ammonia, but is rendered transparent by nitric acid; and the deposit, when viewed by the microscope, consists of octahedral crystals.

If cystine is present, the urine is rendered transparent by the solution of ammonia, and the deposit consists of five-sided plates, clouded in the centers.

If pus or mucus be in the urine, try it by heat; and if the urine be rendered transparent by heat, there is no pus; there is a whitish sediment, not disturbed by any of these agents, and the microscope enables us to see minute, irregular, spherical bodies, with grain-like surfaces. A blood sediment is red, not dissolved by nitric acid, heat, or acetic acid, while the deposit contains minute irregular bodies of yellowish color, the shape of a dime.

There may be some dissolved constituents of the urine; these are bile. To detect it, add nitric acid, and drop the fluids on a plate of glass, at a short distance from it; and as they mix, examine for the green color, which will become manifest if there is bile.

Albumen in the urine is coagulated by heat, and this coagulum can not be redissolved by nitric acid.

Sugar in urine gives it a sweet taste, and a high specific gravity of 1.025, or above. Boil the suspected urine with an equal bulk of liquor of potash. If sugar be present, the urine will assume a deep porter or beer color.

These admixtures may be met with in the urine; but usually the

lithic gravel, the phosphatic gravel, and the oxalic gravel are of greatest importance, because most frequently occurring.

In oxalic gravel the constitution suffers less than in the other kinds, before the local symptoms show themselves. The paroxysm, or fit of the gravel, is perhaps the first occurrence which draws our attention to the state of the urine, and the urine is clear when passed, and does not form a great deal of sediment when cooled.

After this oxalic tendency has existed for some time, there may be a good deal of irritability and nervous depression, with wind in the stomach or bowels, and, in some cases, with certain eruptions of the skin, of a scaly character.

This tendency leads to the formation of the lithic acid deposits.

The phosphates exist in the form of a loose and not over-abundant powder, and the urine is usually very abundant. But in other instances, the phosphates are discharged in such quantities that the urine is very turbid, so as to look like milk.

The general symptoms of the phosphates are severe.

The digestion is much disturbed; the bowels are at one time costive, at others freely acted upon; the pulse is small, frequent, and irritable. Hectic fever attacks at last.

The phosphatic tendency is more connected with fixed or organic disease than is the acid gravel, as it may be called, and with it there often coëxists a stone in the bladder, or disease of the structure of the kidney, or disease of the neighboring parts.

The urine is paler than usual, often smelling of ammonia as soon as it has passed, or very soon after passing, and it is disposed to become turbid (thick, not transparent), or a sort of film forms on the surface of the fluid, which, looked at in different lights, exhibits the colors of the rainbow. It smells sometimes like weak broth.

There is a cystic gravel, in which the urine is of a greenish-yellow color, and of peculiar odor, and it remains muddy after long standing.

But we should always examine the gravel itself; the lithic gravel is grayish, reddish, or brownish, not soluble in diluted muriatic acid, but easily soluble in liquor of potash. The sand consists of fine crystals, or else there are no crystals to be seen by the microscope. The urine is scanty, of darkish tint, is always acid to litmus paper.

Phosphatic gravel is white or gray; it is insoluble in liquor of potash, but easily dissolved in dilute muriatic or acetic acids.

It may consist of the phosphate of lime alone, but rarely; sometimes it may consist of the phosphate of magnesia and ammonia. The urine here is pale, abundant in quantity, prone to decay, and on boiling it may become turbid, and deposit a white flaky precipitate, which precipitate is easily dissolved on adding nitric acid.

Oxalic gravel is generally brown, bluish, or gray; soluble in diluted nitric acid, hardly soluble in muriatic acid diluted, and it is insoluble in acetic acid and liquor of potash; the corresponding urine is pale; and if there be any oxalic acid in it, a solution of muriate of lime being added, there may be a white precipitate, insoluble by muriatic acid.

The cystic gravel assumes a crystalline, and, as it were, a waxy appearance; it is soluble in muriatic dilute acid, not soluble in acetic acid, and soluble in a solution of carbonate of potash, from which the carbonate of ammonia precipitates it. The accompanying urine is of a greenish-yellow color, and of an odor as if that of the briar were mingled with that of decayed urine, and it remains turbid after resting some hours.

Causes.—It is of importance to learn what the causes are in most diseases, but it is particularly so in this.

Particular kinds of diet will give rise to gravel; so will organic diseases of the urinary organs, or of digestion. It is promoted by suppressed perspiration; and it is more frequent in infancy than in youth, and very frequent, if not most frequent of all, after the age of forty, and in old age.

Food and drink are powerful causes, even operating singly, though frequently constitutional causes coöperate.

The kind of urine in which the most frequent form of gravel is found, is that formed by a diet rich, nutritive, solid, and in excess—a diet which abounds in animal principles of nitrogenous kind.

Now, let a person live on such a diet as this, neglecting exercise, and living in indolence and luxury, the lithate of ammonia will soon appear; and this lithic tendency can only be reduced by a moderate diet of non-nitrogenous character.

Particular articles of diet favor the development of gravel, such as those which favor indigestion, and such as calcareous mineral waters.

Thus, too, a fit of indigestion will cause an aggravation of the urinary disorder; for, if acid be secreted in undue quantity in the stomach, it is also secreted in excess in the urine.

Some substances which are hard of digestion would seem to favor the formation of gravel, though they do not excite indigestion. Rich, heavy puddings are of this character.

We can easily understand how highly nitrogenous food acts in causing acid gravel, since the excess of nitrogen derived from the food must be thrown out by the urine in the form of acid. Among these articles of food, perhaps there is not one which will as certainly increase the density of the urine, and increase its tendency to form deposits as cheese; and, accordingly, we find it is injurious to all those who are subject to gravel. It is very indigestible, and may also act in that way, besides acting through its highly nitrogenous character.

Acids, acid wines, etc., are very efficient causes, and they may act through their own acidity, or by increasing the stomach's tendency to form acid.

Again, waters abounding in salts of lime are frequent causes, and the disease is common in districts in which such waters abound.

These errors in diet chiefly conduce to the formation and deposit of the lithic or uric acid gravel; while the phosphatic gravel tendency is fostered by indigestion, the oxalic gravel arises from the use of sorrel and of vegetables which contain oxalic acid.

Certain injuries of the spine or on the loins are among the exciting causes.

Organic diseases in the urinary organs, or in the stomach, will engender this disease; so will organic diseases of the liver, and also of the heart. The red or purplish gravel of the lithic kind is thus caused, while the phosphates are formed more frequently during the irritation from the stone, or from fixed disease in the parts themselves.

Suppressed perspiration from sudden exposure to cold, and also a neglect of proper exercise, will cause gravel in those who are predisposed, and hereditary tendency is frequent. The indolent often live luxuriously, and thus a diminished demand for perspiration will allow the gravel to be increased, neither the lungs nor the skin performing properly their functions of purifying the blood.

Treatment.—When the digestion is impaired, the necessary amount of respiratory food is not dissolved; the tissues are wasted by oxidation, and uric acid appears in and loads the urine. Or, if the food is too abundant in blood-forming material, and if there exists, at the same time, a deficiency of alkali, which alkali is

necessary to promote the change in the effete matter in the blood, we find there will then exist a tendency to form uric acid; or, with a little more oxygen, oxalic acid is formed. Gelatinous food, which can not form blood, and is also deficient in alkali, and strong wines which contain no tartar, promote this tendency very considerably; wherefore we should recommend light wines, which contain tartar; vegetables, which abound in alkali; exercise in the open air, and moderation in meat or blood-forming diet. On the Rhine, where light wines are drank freely, uric acid complaints are not known; but those who drink port and sherry are great sufferers from the uric acid gravel or stone, and from its frequent attending companion, gout.

Upon these principles treatment must be based.

There is a considerable difference in the tractability of the different kinds of gravel under treatment.

The most favorable kind is the lithic gravel, which is least frequently associated with organic and incurable disease. The phosphatic is more obstinate in yielding; it may, however, be removed when it has arisen from some temporary causes, such as nervousness, anxiety, etc. It may also be connected with permanently acting causes, such as organic disease of the liver, kidney, bladder, etc.

Pink-colored deposits are usually thus connected, and may always be looked on as unfavorable.

The oxalic acid is difficult to remove, and it gives more pain to the sufferer than the other kinds; it is also a consequence or concomitant of organic disease.

We may form a favorable opinion from the results of treatment, if it seem to alleviate or remove the sediments. Our objects in the treatment of the lithic gravel are, to increase the quantity of the urine, to lessen the excess of nitrogenous principles, and to neutralize the acid condition of the urine, or to render it, for a time, even alkaline, by certain medicines, and by increasing the perspiration.

The most important rule of all is to diminish the quantity of food taken, and to alter its quality, by diminishing the proportion of nitrogenous ingredients; then we should increase the drink, always avoiding all acid drinks; the medicines must consist of alkalies. Since the time when Stephens's remedy for gravel, which consisted of a soap composed of lime and soda, the alkalies have

been recognized as highly beneficial, both by correcting the acid in the stomach and by acting on the urine itself.

The mode of administering them is to give 20 or 30 grains, two or three times a day, of the bicarbonate of potash, in any proper vehicle; and that vehicle may be some bitter infusion, that of the compound gentian, or orange-peel, or calumba, or quassia; and bitters are valuable additions when there are signs of debility, either of the digestive powers or of the body itself.

If, when there is much acid in the stomach, flatulence arises from the disengagement of the carbonic acid gas from the bicarbonate, then we may give the liquor of potash, 20 or 30 drops, in chicken broth, the almond mixture, milk, or the bitter infusions; but plentiful dilution must be attended to.

We should not continue this liquor of potash long, for it is apt to cause irritation; indeed, in almost all cases, it is better to give the bicarbonates.

The use of alkalies has been supposed to debilitate the stomach; and so they would, if continued too long. But if they do act in this way, such an effect must arise from the abuse of them. They are also said to be prejudicial by changing the uric or lithic acid gravel (red gravel) into the phosphatic kind, or the white. Here we have a remedy in our own hands, which is merely to test the urine with test papers every day, while the alkalies are taken, and discontinue them as soon as the urine becomes alkaline or no longer acid.

We should be provided with test papers, as above recommended, colored blue by infusion of litmus, and also with the same paper slightly reddened by immersion in a weak acid. Healthy urine ought to turn the blue litmus paper a little red, and alkaline remedies ought not to be given in such doses, or so long, as to destroy this property altogether, still less to render the urine alkaline. If the urine turned the red paper blue, we are in danger of producing a deposit of the phosphates, and alkalies must be sparingly given.

Urine, if alkaline, turns the reddened litmus paper blue; and if very alkaline, turns the yellow turmeric paper brown.

Dr. Golding Bird recommends us, from his own experience, to give 20 to 30 grains, three times a day, of the phosphate of soda, well diluted, instead of the carbonates of potash or soda. The phosphate of soda will not impair the digestion as the alkalies are supposed to do.

Dr. Willis, however, in his work on urinary diseases, says that he has known the practice of taking alkalies during a long life, without apparent injury to the health; and Dr. Christison has seen them taken for twenty years without any bad effect.

The carbonates seem to be more efficacious than magnesia or lime-water, which latter some practitioners much recommend. Magnesia is liable to one very serious objection, that of forming concretions in the bowels, where it has long been continued, or taken in large quantities.

The benzoic acid prevents the formation of uric acid, says Dr. Golding Bird. This is the formula :

No. 156. Carbonate of soda.....	90 gr.
Benzoic acid.....	40 gr.
Phosphate of soda.....	3 dr.
Boiling water.....	4 oz.

When cold, add

Cinnamon water.....	7 $\frac{1}{2}$ oz.
Tincture of henbane.....	$\frac{1}{2}$ oz.

Take of this two table-spoonfuls three times a day.

There are several mineral waters very serviceable in gravel. Those of Vichy, near the Pyrenees; of Val and Carlsbad; and of these the writer especially recommends the first. In one case, the effects were both immediate and striking; for the urine became clear after a very few doses, while the small proportion of iron which enters into their composition acted decidedly as a strengthener of the digestion. These waters (see p. 125) are as nearly tasteless as possible, and they may be taken with any wine of good body, and not acescent.

Another recommendation of these alkaline waters is, that they foster no tendency to the formation of phosphatic deposits, instead of the lithic acid.

Exercise, both regular and active, has been insisted on by all practically-informed men. It is true that during exercise the quantity of the urine is diminished; but this is counterbalanced by an increase of the perspiration, while exercise tends to lessen the quantity of the discharge from the bowels, which is derived from the food, and this is effected by its occasioning a greater demand for nutriment, causing a greater consumption of the food, and, consequently, leaving less residue to pass through the bowels.

If much excitement or irritability in the urinary organs and pas-

sages attend, active exercise will increase the pain, so that gentle exercise can then alone be borne, and, in some cases, even absolute rest becomes necessary.

Here practical tact, a correct appreciation of the existing state, and the knowledge derived from experience, are all called into requisition.

Where indigestion accompanies the gravel, much difficulty may exist as to the diet to be chosen. A vegetable diet may, in such cases, be called for, to lessen the gravel; but the stomach may be so enfeebled as to require a different diet, or there may exist an irritability of the stomach, or an imperfect conversion of the food into chyme.

The irritability is best combated by leeches, or stimulant embrocations, by giving bismuth, hydrocyanic acid, etc.; the other state demands bitters, iron, etc.

The carbonates may continue to be given, and animal food may be allowed in small quantity.

The blue pill, two or three times a week, is useful, and some aperient next morning.

Avoid checking the perspiration, and also exposure to cold, wherefore warm clothing is desirable; and if any check should happen, order warm baths immediately, to restore the functions of the skin.

Some have an idea that it is proper to force out the gravel by medicines which stimulate the kidneys, such as turpentine, cantharides, etc. I have never been obliged to order these remedies.

In the phosphatic gravel, our treatment must differ considerably. The urine is neither defective as to quantity, nor is there any excess of the nitrogenous ingredient in it, while the whole powers of the system are enfeebled by some long-existing causes, or by some chronic disease, which has been long exhausting the vital powers.

The diet must comprise nutritious and digestible food, including wine, in many cases, according to the general state. To diminish the deposit in the urine, acids are to be used—not that they act by neutralizing the alkalinity of the urine, so much as by improving the digestion. It is now a received opinion that acids will neutralize the alkaline urine in some cases, and that alkalies will increase the tendency to deposit; still, it has been found that

alkalies, in the form of the bicarbonates, much diluted, will correct the phosphatic tendency.

The mineral water of Vichy (see page 125), which has just been recommended in the lithic gravel cases, will act beneficially in phosphatic cases, removing deposits and relieving the suffering. The chalybeate ingredient is here probably useful.

Laxatives are to be given, and such as tend to increase the quantity of the urine are to be preferred—the neutral salts, as cream of tartar, etc.

The secretions must be regulated by blue pill, or by an occasional dose of calomel.

For pain, we must give opium—from twenty to thirty drops of tincture of opium, when pain is severe, or a grain of opium at night, or five to ten grains of Dover's powder.

The preferable acids are the nitric or muriatic (hydrochloric), or both combined, and they may be given in the decoctions of pareira brava, or uva ursa (whortleberry.)

Decoction of Pareira Brava.

No. 157. Take of sliced pareira..... 10 drs.
 “ Distilled water 1½ pt.

Boil down to a pint.

The whortleberry decoction is made by putting one ounce of the whortleberry leaves into a pint and a half of water, and boiling down to a pint.

No. 158. Of either of these decoctions..... 1½ or 2 oz.
 Dilute nitric acid..... } of each 5 to 10 drops
 Hydrochloric acid..... }
 Mix.

Take three times a day.

Oxalic gravel demands treatment similar to that recommended for lithic gravel, only the diet does not require to be so abstemious, or to consist of vegetables, as in that for lithic acids.

Moderate living, the alkaline carbonates of potash or soda, properly regulated exercise, warm baths, and warm clothing, are what is wanted. Sorrel, wood sorrel, and all articles containing the oxalic acid, must be strictly avoided. It is also better to rely on the carbonate of potash than that of soda, as the former causes salts to form, more soluble than those formed by soda. The bicarbonate of soda may sometimes combine with the lithic acid, and form lithate of soda, which is an insoluble salt; whereas, if

the bicarbonate of potash combines with the lithic acid, the resulting lithate of soda is a soluble salt, and so passes off in the urine without any danger.

Alkalies should be given an hour before food is taken, so as not to interfere with digestion.

Warm baths must never be neglected; they are powerful means; for they act on the nerves as a stimulant or a sedative, and on the blood in two ways—one by removing substances from it, the other by enabling remedies to be absorbed into it.

The Teplitz alkaline bath may do good by the alkali being absorbed. That the action of these baths may be made either stimulant or sedative is evident, and cold may be managed to act in a similar way.

To remove substances from the blood, the vapor bath is most efficient; and the two baths, vapor and warm-water bath, should be used in succession, and both before food is taken, as the system will then be in a fitter state for absorption.

The vapor bath first, to remove water and acid substances from the blood; then, immediately after, an alkaline water bath, by which alkaline water may be taken into the blood.

The diet, in lithic gravel, should exclude as much nitrogenous food as possible; only a moderate quantity of meat and a small proportion of bread are to be allowed. Flour has too much starch to allow of living on bread. The object is to repair the tissues, and yet introduce as little of nitrogenous matter into the blood as possible. In vegetables, sugar and starch abound, and nitrogenous and oleaginous material exist in small quantity. Greens and peas are inadmissible; so are apples and pears.

There is no objection to fat, but an excess of butter must be avoided.

Gelatine in soups and jellies may be taken, in lieu, partially, of meat; for the albuminous tissues can not be formed from it, and the strength would fail; wherefore some meat is necessary.

For drink, distilled water, oxygenate water, etc.

STONE, OR URINARY CALCULUS.

Sand or gravel may be converted into stone, or a portion of it may be cemented into stone, while the remainder may be passed as gravel.

This binding together of the particles of gravel is very important; for if there be no animal matter in the kidney to act as the cement, no stone will be formed, or very rarely, since stone is seldom or never formed from a nucleus created in the bladder, but in the kidney.

Whence comes this cement, or how is it formed? The mucous membrane of certain parts of the kidney secretes, or forms, in health, a fluid, diluent and watery; but when the parts are inflamed, or when the blood from which this mucous fluid comes is too rich, too fibrinous, this usually diluent fluid becomes thickened, or inspissated into a kind of glue or cement.

Thus the first class of causes of urinary stone is, either an inflammatory state of the kidney, or too animalized a state of the blood; hence the advantage from plentiful dilution, from exercise, from a diet not too luxurious, and from healthy digestion, which precludes the formation of acid.

The second class of causes are those producing a sudden change in the state of activity of the kidneys; suppressed perspiration causes increased vicarious action in the kidneys, and the excrementitious matter, which the skin ought to have carried off, is transferred to the kidneys, and solid particles in the urine are deposited. This transfer of action excites also inflammation of the kidney, and thus the plastic lymph is formed. These facts give us some insight into the way in which cold, bleak, damp situations seem to favor the well-known occurrence of stone in such districts.

A third class of causes is erroneous diet. When the fluids in the alimentary canal are acid, the urine is acid; and by giving alkalies, it becomes alkaline. If in the stomach of a person living chiefly on animal food too much acid be generated, uric acid predominates in the urine; but when acid is produced in the stomach under poor diet, oxalate of lime is often formed in the kidney.

We have thus examined the causes leading to the formation of urinary stones, because patients who pass gravel may avoid the graver results from calculi, by avoiding the causes which conduce to the formation of the animal cement or glue above described, and they may pass great quantities of gravel, for many years, without the formation of a single calculus.

Symptoms—are those of gravel, with those arising from the impaction or passage of the stone from the kidney, down the narrow

and irritable passage into the bladder, called the ureter. A stone in the kidney is attended with pain or uneasiness in the loins, when it begins to excite pain, though it may lie in the kidney for an uncertain time, without any manifestation of its presence.

The pain from a stone in the kidney is usually attended with a pain at the neck of the bladder, low down in the body; that from a stone in the bladder is seated more at the end of the yard. The renal calculus may cause a wasting away of the kidney, or an inflammation in the parts. Of wasting away, there is no marked symptom, but the inflammation shows itself by the ordinary signs of inflammation. Hectic fever sets in at last, if relief be not obtained.

When the stone is passing downward, there are pains like those of colic, only fixed in a region corresponding with the course of the ureter; and nausea, anxiety, constant desire to pass a scanty and sometimes bloody urine, with great pain, will also attend.

Suddenly these sufferings cease, and then it is probable that the stone has passed into the bladder. There it may remain without uneasiness, until it has increased to a large size; but its characteristic effects are, frequent desire to make water, a sense of weight and uneasiness in the bladder and at its neck; the pain is increased by exercise, exertion, or jolts; gravel escapes in augmented quantities, and there will be itching and pain at the glans penis, and this is endeavored to be alleviated by stretching and pulling the foreskin, which becomes elongated. The constitution sympathizes, and there are impaired digestion, feverishness, disturbed sleep, debility, emaciation, and anxiety, the urine becoming mixed with mucus and streaks of blood.

The presence of the calculus or stone is made evident by sounding. If the stone gets into the urethra, and there sticks from its size, it causes pain at the part, and an inability to pass any urine. Inflammation of the bladder at length takes place.

These kinds of calculi vary in size and form. Those which are in the kidney are small—often no larger than a pin's head, and seldom larger than a pea—but when they get into the outlet of the kidney, they may grow much larger, even attaining the size of a tennis-ball, and weighing two or three ounces. Stones in the bladder may be very large indeed; and some weighing twelve ounces have been extracted from the bladder; and one has been found in the bladder, Dr. Christison tells us, which weighed forty-four ounces.

They differ variously, also, both as to form and surface; and the rougher, the more angular the surface, the greater the pain. They may vary in composition; some are composed of alternate layers of lithic acid and other components. The nucleus is usually small, and mostly consists of lithate of ammonia or of oxalate of lime; but a nucleus may be formed of a clot of blood, or in the bladder, of a broken instrument, a portion of a bodkin, or bone, a tooth, a pebble, and such like.

Treatment of Stone.—The great object is to try to prevent the binding of the particles of gravel into a stone, which is to be done by avoiding the causes which have been shown above; and the treatment for gravel is also the treatment for stone, so we need not repeat. But, in addition, we have to deal with the stone in its passage down the ureter, or when it is there arrested.

To calm the intense pain, opium, twenty or thirty drops of the tincture, repeated as often as circumstances seem to require.

To relax the spasm or the contraction of the passage, warm baths must be tried; also anodyne injections, such as twenty or thirty or more drops of laudanum, in some water, at near blood heat. A strong purgative will promote the expulsion of the stone sometimes.

Many attempts have been made to dissolve the stone in the bladder by injections into it; but it was always supposed that the solutions for injecting required to be so strong, for any solvent effect to be produced on the calculus, that it was feared the coats of the bladder would suffer. It has lately been found that such strong injections are not needed, and that it was only necessary that the water or fluid to be injected should be often changed, or else supplied in a continuous stream.

Sir Benjamin Brodie has proved that a solution of two drops and a half of nitric acid, in every ounce of water, may be injected with impunity, even into a tender, irritable bladder; and he effected a cure, in one instance, by using an injection of this strength, for fifteen or thirty minutes, every two, three, or four days.

To inject any fluid into the bladder, a double catheter is necessary. Diluted solutions of the alkaline carbonates, or the Vichy waters, may, with safety, be thrown into the bladder in the lithic gravel cases.

Galvanism has been proposed, to break down the stones into gravel, which is ejected very easily.

CANCER, OR SCIRRHUS.

Many names have been given to growths of this nature—scirrhus, stone cancer, soft cancer, colloid or gum cancer; mammary sarcoma, containing a substance like boiled udder; lardaceous sarcoma, containing white matter, varying in consistence from that of softish cartilage to that of pork fat.

Scirrhus is remarkable for its hardness; it creaks when divided by a sharp knife, when the surfaces exposed by the knife show a glistening appearance, like that of satin, and a white, or gray, or bluish-white color. Intersecting bands, having a fibrous aspect, run across this grayish substance. By strong pressure, a thin liquid may be made to ooze from a slice of the tumor.

Another kind of cancer is called the encephaloid or brain-like. Here we see a soft, white, opaque, pulpy substance, which resembles the human brain. This pulp is traversed and circumscribed by fibrous dividing lines, which are sometimes extremely thin and delicate.

The third kind is the colloid, or gelatiniform, or areolar cancer; and here we see small portions of a greenish-yellow, transparent gum, or jelly, arranged in regular cells.

All these kinds are prone to multiply in various other parts, when they once occur in one part; they are attended with severe, lancinating or shooting pain; they are not to be controlled by any known remedy; they tend to augment in bulk, more or less rapidly, eating away contiguous parts; they break out when near the surface into a foul ulceration, producing ghastly disfigurement, and ultimately destroying life.

This dreadful foe attacks almost every organ or texture of the body.

The parts most liable to cancer are those which are either exposed by their situation to slight accidental injuries, or by their function to variations in the supply of blood. To the former belong the integuments, the gullet, and the organs of locomotion; to the latter, the womb, stomach, liver, and testicle. The female breast belongs to both heads, and this disease frequently attacks it.

The morbid deposit is met with in those parts of organs which contain secreting organs, as in the mouth and neck of the womb, and the pylorus (the outlet from the stomach into the bowels).

The signs of the cancerous tendency, when fully developed, are

sufficiently characteristic ; the complexion has a pale, lemon tinge ; the eye is lusterless ; the countenance sad ; emaciation, disordered digestion, and languor of mind and body attend.

It is not always easy to tell the cancerous formation from some non-malignant disease ; and some tumors have been hastily adjudged to be cancerous which were not so, adding much needless anxiety to the patient's mind.

If the part attacked is insulated, we must form our conclusion from the character of the pain, which is peculiar, of a darting kind, and subject to nightly increase, from the form of the ulcer, from the intractability of the disease, and, lastly, from the enlargement of the adjoining veins. If, with these, the constitutional signs are also present, we are more able to form a conclusion ; for, though none of these signs can be relied on singly, yet on all united we may place some confidence.

Even in the dead subject, careful dissection is sometimes requisite to make manifest the nature of the disease.

The mode in which cancer originates is uncertain ; the mode in which it spreads and multiplies is better understood. Sometimes several separate and distant organs may be attacked by cancer at the same time ; at others, it begins in one spot, say the breast, with a small tumor, while the general health is not affected. This tumor enlarges and softens ; the glands in the armpits swell, become hard and painful ; an open ulcer is at length formed, and soon deposits take place in some of the internal organs, forming secondary tumors or deposits, and the latter are said, by many, to be caused by the former.

If this be true, one rule becomes evident, namely, to remove the primary tumor as soon as possible ; but it is very uncertain whether early operations should be advised, or how many never suffer from second attacks, for cancer is a blood disease.

Some special state of the natural solid tissues forms a most essential element of cancerous disease, and the tumor is a mere accident, and a sort of local agent in evolving the malady ; and, lastly, there is a peculiar constitutional state, the nature of which can not, at the present day, be even divined, which is the very fountain and origin of the disease.

In the first period the blood and solids are specially modified. Injury perhaps occurs, and an exudation, containing an intrinsic power of vegetation follows ; the vegetating faculty of the exuda-

tion reacts on the system, by constantly draining it of its nutrient materials; the progeny feeds on the parent organism.

In the second period, the exudation encroaches and causes ulceration; discharges occur and drain the system.

Third period. This is the last period of exhaustion.

We shall have occasion to mention cancer of the womb, etc., elsewhere; so, in this place we will allude to the general treatment, which is, indeed, the only treatment that can prove efficacious.

Treatment.—The best preventives comprise every thing that tends to keep the body in health.

The curative contains a long list of remedies. Some of the most noted we will mention.

Hemlock.—Much difference of opinion exists as to the curative efficacy of this plant; but cases are on record giving an impression that the disease has been arrested in its advance by hemlock, long continued, and the quantity increased unto even poisonous doses.

Dr. A. Bayle gives three hundred and forty-one cases of cancer thus treated, whereof forty-six were cured, twenty-eight benefited, while in two hundred and sixty-seven no benefit accrued.

Dr. Walshe thinks that the hemlock is only useful by assuaging irritability and pain; he gave ten grains of the extract three times a day.

Belladonna, or Deadly Nightshade.—One case was cured by infusion of belladonna, and a plaster of it was worn; a woman of fifty-one was the patient.

Aconite (monks-hood), henbane, laurel, stramonium, mezereon have all failed. Foxglove also failed.

Sedum Acre (wall pepper) has seemed to quiet irritability; two to fifteen grains, daily.

Antacids—Ammonia.—Martinet and Barbette, in 1781, speak enthusiastically of ammonia, both externally and internally. Give four or five grains, in water, daily, and apply this lotion:

No. 159. Strong liquor of ammonia.....	$\frac{1}{2}$ oz.
Water.....	1 pint.

Place linen folds, wetted with this, on the part twice daily. Much benefit was derived during the most advanced ulceration.

Tonics—Iron.—Mr. Carmichael extolled iron; used it externally and gave it internally.

Monsieur Duponget gave the biphosphate of iron in three cases;

the fetid discharge was corrected, pain removed, appetite and sleep restored.

Dr. A. Thomson gives the iodide of iron, the syrup of the iodide ; three grains of the iodide.

Gold and copper have been tried, but without benefit ; so has the chloride of barium.

Mercury is considered highly pernicious by most practitioners.

Iodide of potassium in some mucilaginous liquid, about one hour and a half after meals, may be tried, if there is no irritability of the mucous membrane of the alimentary canal.

Arsenic.—A Swede, in 1778, cured thirty cases, in fifty years' practice, by arsenic. Mr. Hill thinks it will retard the complaint, and prevent the ulcerative stage. It may be given in conjunction with narcotics and alkalies, or otherwise. But we can combine two powerful alteratives in the iodide of arsenic ; it must be given in doses, beginning with one-sixteenth of a grain twice daily, two hours after eating, increased to one-twelfth of a grain ; this may be borne for months. Its action must be watched, and unusual perspirations, with dry gullet, give warning when to stop ; so does headache. The pain and tumor may decrease in violence under this remedy, the general health improves, and the tumor diminishes, or the enlargement is at least suspended. Dr. Walshe tried this, in some cases, where the constitution had begun to suffer.

This seems the only remedy that is worth trying ; but Dr. A. Thomson always put his patients on a milk and vegetable diet, excluding meat, which latter caused more stimulus than a vegetable diet would ; and the stimulus of a meat diet might possibly be incompatible with the action of the iodide of arsenic. Dr. A. Thomson published three cases of what he considered cure, and in which there had been no recurrence for years.

As to external applications, leeches, occasionally applied, seem to relieve local fullness, but much leeching will only break up the constitution.

Iodide of Lead Ointment.—One drachm of iodide of lead to one ounce of lard. Smear the part very gently with this, twice a day.

Pressure, whenever it can be applied, and the tumor is not of excessive bulk, should be resorted to early, and Dr. Arnott has invented an apparatus for the purpose. This pressure relieved the pain in a very marked manner, so long as it is kept applied. Dr. Walshe says its effects are, removal of existing adhesions, disap-

pearance of swelling in the communicating lymphatic glands, cessation of pain, and gradual reduction of bulky masses to small, rounded nodules, or hard flat patches (which appear to be, both locally and generally, perfectly innocuous), and in the most favorable cases, a total removal of the morbid production. But the pressure must be tried as early as possible. To avert bleeding from the part, the slack air-cushion must be used.

To open cancer, various applications are made—hemlock poultices, yeast poultices, also poultices of stramonium, or of bruised carrots. Various caustics have been tried, but with little good result. Dr. Walshe's summary of deductions is, that undoubted cancerous tumors, both before and after ulceration has set in, have been cured or rendered innocuous.

The notion that cancer is always incurable by remedies is not warranted. Cancerous growths may, at an early period, be removed altogether. Treatment, even when it fails to cure, may alleviate much or produce, a suspension of the disease. Well-directed compression aids the other remedies.

Dr. Arnott has applied intense cold to cancer with happy effect. The tumors seem to become blanched and cold when thus treated.

All modes of treatment fail in some cases, or even exasperate; but we can not tell beforehand which cases will prove incurable. The brain-like and gummy cancer are less within the influence of remedies than is scirrhus.

Cancerous affections may last from a few weeks to many years; even ulcerated cancer may exercise no obvious influence in shortening life, and hardly cause any more inconvenience than a perpetual issue would do.

BRONCHOCELE, OR SWELLED NECK.

This is a swelling in front of the neck, called also Wen, and, when large, very much disfiguring the person. The swelling is, at first, firm and elastic, then soft and flabby. It grows slowly at first, but sometimes increases very rapidly, extending in all directions—upward, downward, and sideways; it may even overhang the chest, and, by its pressure, cause much inconvenience.

Causes.—The female sex, hereditary tendency, and puberty are predisposing causes. The exciting causes are unknown. It is

endemic in certain places and countries. When combined with imbecility and idiocy, it is the cretinism of Switzerland.

Treatment.—If there is heat of skin, or the patient is full bodied, lower at first a little; apply leeches near the part.

Then paint once daily with tincture of iodide, or rub in some iodide ointment.

At the same time, give about two grains of the iodide of potash, three times a day.

Setons and all operations must be done by the surgeon.

HEADACHE.

Headaches may be divided into dyspeptic or sick-headache; 2d, nervous; 3d, from fullness of the vessels in the head; 4th, rheumatic; 5th, gouty; 6th, from disease of the brain. The signs of the first are chilliness, lassitude, coldness of feet; face flushed, swelled, and forehead hot; a dull and heavy pain in forehead or temples; veins swollen; no appetite, sickness; pulse quickened, often full; brown fur on tongue; acrid sensation at back of the throat, particularly after eructations; mouth clammy, saliva thick, breath offensive; skin dry and parched; urine limpid and abundant; palms of hands hot; intellect impaired for the time. The pain will shift to over the eyebrow, and this pain is peculiar to stomach and bowel irritation; noise and light aggravate the pain, and the pupil of the eye is contracted. Retching, vomiting, and straining succeed, at first increasing the pain. Next morning the pain may be gone, but it may recur from some atmospherical cause.

Sometimes the liver ducts become implicated, and much bile is discharged.

Causes.—Every thing that deranges the stomach, improper food, constipation. The second, or nervous headache—the signs are here those of the first kind, only in the nervous the pain precedes the signs of stomach disorder, and the pain is acute and excruciating, not dull and heavy; pulse small and frequent. This often comes on after mental excitement or fatigue. It is more frequent in females, and is often connected with monthly suppression. It may be severe during the day, and go off toward evening; but it generally recurs every evening, owing to the periodical augmentation of the energy of the brain occurring every evening. The headache of hysteria is preceded by spasmodic pains in the belly;

then confined pain in the head and about it, and it is confined to a space that can be covered by a nail; wherefore this headache is called *clavus*. Here the attack is sudden, flatus is expelled, and antispasmodics relieve. This nervous kind generally comes on after excesses or fatigues; constipation and irritation in the bowels are causes. This headache may become habitual, or impair the intellect or sight.

Treatment of these two kinds.—An emetic in the dyspeptic, if there is no fullness in the head-vessels; Eau de Cologne, one drachm in camphor mixture, one or two ounces; or the carbonate of potash, thirty grains, with spirits of sulphuric ether, thirty drops, in nutmeg water and distilled water, an ounce of each. A colocyath and blue pill at night; next day, effervescing draughts with tincture of gentian, one drachm in each.

Eau de Cologne externally, mustard baths to feet; opiates are pernicious.

After the bowels are open, give half-grain doses of extract of aconite, every three or four hours.

HEADACHE FROM FULLNESS.

The arteries may pour too much blood into the brain, or the veins may convey it too sluggishly away, whence stagnation arises. In the arterial, the face is flushed, tumid, and pulse full; in the venous, there is paleness of countenance, a spare habit of body, and small, feeble pulse. The pain is dull, deep-seated, going down the back; eyelids heavy and depressed; stiffness at back of the neck, vivacity gone, mind cloudy; a feeling as if a cord were bound round the head, also similar feeling at pit of the stomach; enlarged pupils, dizziness, and a sense of fullness, confusion of thought and intellect.

Causes.—Excessive fullness of vessels, great corpulency, a stooping position, and sedentary life; suppression of accustomed discharges, cold, hair worn too long, mental anxiety, atmospheric changes. Headaches are dangerous when they are attended with signs of some disease in the brain, such as noises in the ears, much giddiness, temporary loss or obscurity of sight, difficult or slow utterance, numbness. Violent, constant, and obstinate headaches are more alarming than are those which arise out of some temporary and removable cause.

Treatment.—Where there are signs of fullness, blood-letting, leeching, and very moderate or low diet, purges, cold to head, restoration of suppressed evacuations; but if there is more weakness than fullness, then purges are preferable, which take away the watery parts of the blood, and not the red particles; the quantity of blood circulating will thus be materially lessened.

The rheumatic headache is relieved by pressure; it is an aching, heavy pain; it may continue for several days, and is always worse at night, often coming on at the same hour; the arteries of head and temples do not throb, nor is the head hot, but rather cold. The cause of this is cold draughts of air.

Here warm baths are of great service, in most cases; give Dover's powder, five grains at night; purges, consisting of pills of quinine, one grain, and acetous extract of colchicum, half a grain, or one grain twice a day.

GOUTY HEADACHE.

Here there is the accompaniment of gouty symptoms. The treatment is similar to that for the last kind, only the carbonate of potash or soda must be given. (See GOUT.)

HEADACHE FROM AFFECTION OF BRAIN.

The head is more disturbed and pain more constant than in the other kinds. The treatment must depend on the state of the brain itself.

TOOTHACHE.

If the tooth is rotten, extraction is the best remedy; where this can not be done, there are various applications—dropping prussic acid into the tooth, or nitric acid, or this:

No. 160. Alum reduced to powder.....	2 drs.
Spirits of nitric ether.....	7 drs.

This has been said to cure the worst cases.

Another is this:

No. 161. Creosote.....	30 drops.
Tincture of opium.....	60 drops.
Mastic.....	2 drs.

Make a paste.

Another excellent remedy, said to be infallible :

No. 162. Powdered capsicum.....	2 to 3 drs.
Cyanuret of potash.....	10 grs.
Molasses	$\frac{1}{2}$ oz.
Mix.	

The Gregorian remedy consisted of Curry powder made into a paste with brandy.

For tooth-powder, prepared chalk with cinnamon powder is the best. Some oil of roses may be added. The chalk neutralizes the acidity of the mouth.

There is a form of faceache, or neuralgia, in which the pain seems to be fixed in the teeth, and many sound teeth have been in vain extracted. The treatment should be constitutional, or else all the teeth may be taken out, and no good result.

FACEACHE—NEURALGIA—TIC DOULOUREUX.

To the physiologist it would not appear extraordinary if spasmodic attacks of pain, in various parts of the human frame, were much more frequently met with than they are ; for it is so constituted as to render it peculiarly sensible to the electrical changes in the atmosphere. The pains of chronic rheumatism are frequently exasperated during the prevalence of certain winds—the east, “neither fit for man nor beast,” and the north-east especially. Even in bed in the morning, before rising, many persons have been able to tell that the wind has changed to east, from increase or accession of pain. Neither the mere coldness nor humidity would be likely to produce such an effect on a person in bed, but all-pervading electricity might. And, again, some persons have been relieved of their pains by seating them on a seat resting on glass, thereby insulating them, and preventing the passage of the electric fluid through them ; and others, by the employment of Pulvermacher’s hydro-electric voltaic chain, and of electricity.

The student in organic chemistry finds some clue to the rationale of these facts, when he reads about the secreted fluids of the body ; for while the blood, saliva, the intestinal secretion, the bile, and milk, are alkaline, and the pancreatic juice either alkaline or neutral, the juice of the muscles, the gastric juice and the urine of the carnivorous and omnivorous animals are acid. The acidity of the juice of flesh depends on the phosphate of potash,

which is an acid salt; yet it is formed in close proximity to the alkaline phosphate of soda, which is in the blood, the blood and juice of flesh being separated only by very fine membranes. An alkaline state of the blood is indispensable to its functions; for life could not coëxist if the blood were acid, therefore every acid that enters the blood must be neutralized. Yet the blood is in close proximity to an acid liquid—the juice of the flesh—and is communicating with it, with the gastric juice, and with urine, while it is frequently receiving uric acid and other acids.

We thus see that a galvanic circle is formed, ever acting in the body, by the existence, in all its parts, of an alkaline liquid—the blood—and an acid liquid, the juice of the flesh, separated by a very thin membrane, and in contact with muscles and nerves; and thus electric currents may take place in the body, causing the contraction of muscles, and the occurrence of pain, when the muscles contract from disordered function. The animal body may be regarded as a galvanic engine for the production of mechanical force.

Neuralgia is a very agonizing pain in the face, coming on at uncertain intervals, and darting along the course of one of the nerves of the face. If the eye is affected, tears will flow; if the mouth or jaw, the saliva is increased. It continues for an uncertain time, and disappears as suddenly as it came on. When the pain attacks the eyebrow, it often comes on periodically. This form has been called “brow ague.” The general health is unaffected, and life continues often to an old age.

Causes.—These may depend on functional derangement, or on organic disease. Nine different causes have been assigned by one writer on this subject, viz.: A neuralgic habit; 2d, dyspepsia; 3d, disease of liver and other organs; 4th, too little blood in the system; 5th, disease of the spine; 6th, disease of the womb; 7th, disease of the brain; 8th, local mechanical causes; 9th, malaria and recession of eruptions, and other causes.

Treatment.—This must be arranged according to the causes. Carbonate of iron is the most successful remedy, and large doses are given by many—one drachm, three times a day; but it is of first importance to correct the secretions and to regulate the diet.

Where the liver is in fault, some calomel, one grain every night for six or seven nights, and gentle aperients every morning.

Some have succeeded in relieving the pain by giving one grain of extract of belladonna for three successive hours, during the at-

tack. Soon after the third pill the pain began to subside. Dr. Hunt gives arsenic with great success. He gives it with bicarbonate of potash, if there is any acid; or it may be given with opium or belladonna. He begins with four drops of Fowler's solution of arsenic, combined with eight drops of paregoric, and he increases the arsenic till symptoms of its decided action come on, which commonly happens when the dose has been increased to ten drops. These signs are dry mouth and gullet, pain and suffering in the stomach, and white tongue; then discontinue the arsenic; give farinaceous food, with nitrate of potash, three or four grains, and of Scheele's prussic acid, two drops, in some water.

When the tongue is foul, farinaceous food (see page 85), till the stomach becomes less sensitive. Then the diet must be gradually more nutritious.

Where the spine is affected, blisters to the back, and stimulating liniments.

An emetic before, or as soon as the attack has commenced, has done good service.

In periodical attacks, an emetic, then a purgative, then quinine or arsenic; but do not give arsenic if there is a red loaded tongue, or if the urine lets fall a copious sediment. Look to the teeth always.

I would give muriate of ammonia, thirty grains, three times a day; and when one remedy fails, another should be tried.

For external applications, the aconite, or its alkaloid.

Aconitine is most likely to deaden the pain; one grain of aconitine to sixty grains of cerate may be rubbed into the part; veratria in like quantity.

If the pain continue long, put a small blister, or raise a blister with nitric acid, as before recommended, in page 253, and dress the blistered surface with acetate of morphine, three grains; lard, half an ounce.

The author has ordered, with considerable effect, the liniment composed of soap liniment, two ounces; cyanuret of potass, ten grains, and of extract of belladonna, forty grains; rub in, the size of a nut, two or three times, at intervals of an hour or less.

The tincture of wild or Indian hemp, ten drops, three times a day, will often relieve. It causes feelings resembling those of intoxication.

The magnet has been of service.

Whatever seems wrong in the system should be corrected, if possible to do so; but as this painful disorder often depends on organic and irremovable disease, palliatives are all that can then be resorted to

SPRAINS.

A strain signifies a violent stretching of tendinous or ligamentous parts, with or without rupture of some of their fibers. Such an accident is followed by instant severe pain, so severe as sometimes to cause faintness, and by swelling, to which succeed weakness and stiffness.

If the accident is not treated properly, inflammation and fever may arise.

Treatment.—Rest, absolute rest is necessary. Then apply warm fomentations or cold applications, whichever may be preferred by the patient. Leeches, low diet, purges, etc., if inflammation seems to threaten; then, as soon as all heat and tenderness are gone, we must procure absorption, and restore the strength of the part by rubbing with various stimulating liniments, such as this: Of liquor of ammonia, two drachms; of soap liniment, one ounce.

My favorite application is iodine, either rubbed in, in the form of ointment, or else painted over the parts by means of a brush. Of iodine, thirty grains should be put into one ounce of alcohol, or spirits of wine. It leaves a walnut-liquor colored stain on the skin, which goes off after a time. This is a cleanly application, not troublesome, and only requires to be painted on every night, or night and morning.

The ointment is thus made: Of iodine, thirty grains; iodide of potassium, sixty grains; lard, two ounces. Mix.

Hand-rubbing, moderate exercise, and bandages.

A succession of blisters has been found necessary, in some obstinate cases.

SCALDS AND BURNS.

These are usually divided into three classes:

- 1st. Burns producing mere redness.
- 2d. Those causing vesication, little bladders on the part.
- 3d. Those causing the death of the part burned.

The symptoms of those of the first class are mere superficial inflammation, which goes off, or, as the medical men say, terminates

in resolution, and the outer skin or cuticle peels off, or it may not do so.

In the second class, the inflammation excited is in a higher degree, and the true skin exudes serum and forms vesicles, which vesicles, in slight cases, dry up and heal; but if the injury is followed by suppuration, or the formation of matter, they will, probably, be succeeded by obstinate ulcers. The pain here is much more severe than in the former case, especially if the vesicles have been torn, and the surface of the true skin exposed to the air and to the contact of foreign bodies. The formation of these vesicles may often be prevented by proper treatment; they generally appear immediately after the accident, although they, in some rare cases, do not rise for three days.

The third class of burns is attended with mortification, from disorganization of structure. There is less pain, but the consequences are very serious; for the sores which remain after the mortified parts have separated may remain for months and years before they heal.

Constitutional symptoms are, a great sinking of the powers (collapse, it is called); the surface is pale, the pulse quick and feeble; violent and repeated shiverings; the sufferer complains of cold.

In fatal cases, laborious breathing, coma, and death succeed; while in others the fatal event is preceded by signs of an imperfect reaction, the pulse and heat of skin recovering from the shock a little; to these succeed delirium and sharp pulse.

In burns, blood is driven from the surface to the interior; hence the frequent consecutive inflammations of brain, lungs, pleura, stomach, or of bowels. When these inflammations occur early, the serous membranes are found to have suffered; when late, as in chronic cases, the mucous.

Burns of great extent are always dangerous, and those on the body are more dangerous than those of an equal extent on the arms or legs. There is more danger, too, in the extremes of life—in infancy and old age.

The pain may be violent, and so tend to exhaust; but a total want of pain is more unfavorable, especially when accompanied by drowsiness and apathy; for it is as if the scale of sensibility had shrunk below the point of pain. Constant shivering, coldness of legs and arms, a livid hue of skin, accompanied by drowsiness,

and twitchings of muscles are alarming symptoms, and the invariable forerunners of death.

Burns may prove fatal at three periods—in the stage of collapse or sinking, in that of reaction, and at any subsequent period.

The first period may comprise about five days, the second will comprise more or less time, according to the state and the organ inflamed; in the third, death ensues from the exhausting suppuration which has drained the sufferer.

In some cases, ulcers have been formed in the bowels, after severe burns.

Treatment.—Great debates and discussions have been expended on the question whether Kentish's stimulating plan of treatment, or that by ice and cooling applications, be the better plan; but we must aim at the following objects:

1st. That the first applications should be of a mildly stimulating nature.

2d. After the first two or three days, they should be soothing.

3d. Slight astringents may be applied.

4th. The part must be carefully excluded from the air.

The treatment may be divided into the local and the constitutional treatment, to which succeeds that of the ulcers.

Local Treatment of Slight Cases.—In slight cases of the first and second degrees, the little bladders should be pricked with a needle, to let out the serum; then the burned part should be covered with lint soaked in a liniment of equal parts of oil and lime-water, and then be wrapped in soft cotton-wool.

After the first two or three days, a zinc lotion may be applied on lint, and covered with oil silk; or a poultice, or the water-dressing; after these, the chalk ointment.

Chalk Ointment.

No. 163. Chalk, finely powdered.....	1 oz.
Olive oil.....	3 drs.
Lard.....	$\frac{1}{2}$ oz.
Mix.	

To defend the parts from exposure to the air, many plans of treatment are recommended. Cover with collodion, or bathe the part with tepid oil of turpentine, or alcohol, or ether (which may be warmed by putting them into a tea-cup immersed in boiling water), then enwrap with lint or cotton.

If the cooling plan be preferred, cold water, iced water; pounded ice mixed with lard, potato poultice, or grated turnip; but when cooling applications are preferred, they must be renewed often enough to keep up the sensation of cold.

Carron oil, composed of equal parts of linseed oil and lime-water, is much recommended; its smell is a great drawback.

Flour, sprinkled over the part with a dredger, or soft and finely-carded cotton, are very useful applications. They are to be strewed on in thick layers, so as to soak up, absorb the discharge. But these are apt to become dry, hard, and irritating; and maggots may get in, or putridity be induced.

Warm vinegar may be applied for the first twelve hours, then poultices till matter is formed, then afterward chalk.

Severe cases require bathing of the parts with tepid turpentine; then put on quickly lint, spread thickly with this liniment:

No. 164. Ointment of resin.....	1 oz.
Oil of turpentine.....	$\frac{1}{2}$ oz.
Mix.	

Over these warm flannel.

So long as no bad smell or profuse discharge ensue, these may be retained. When to be taken off, great care is necessary not to bring the skin with them.

The constitutional treatment must be adapted to the state. If collapse is urgent, give stimulants, such as hot brandy and water, beef tea, ammonia, the ethers, etc.

If less severe collapse be present, the stimulant and supporting plan must be modified accordingly.

Opium is forbidden by many, on account of its tendency to add to congestion in the brain; but if there be much pain, opium can not be dispensed with, but must be given. To children, 20 to 120 drops of compound tincture of camphor may be given, according to age.

In the fever that follows, the bowels must be kept gently open, and the diet must be unirritating, but not too low.

If inflammation or congestion take place in head, chest, or abdomen, we must treat accordingly. (See INFLAMMATION of those parts.)

Tenderness on the right side, in the liver region, or vomiting, may indicate irritation or ulceration of the bowel, into which the stomach leads; here farinaceous and mildest diet should be the rule,

with two or three-grain doses of mercury, with chalk powder and some two grains of henbane powdered, two or three times daily.

The ulcers which are left are often very difficult to heal, but it is supposed that too stimulating a diet is often kept up to restore the strength; and thus irritation is induced, rendering the ulcers more difficult to cure.

There are various applications to ulcers; when the discharge is profuse, very finely-powdered chalk should be sprinkled over the ulcer. An ointment of carbonate of magnesia is useful.

But after all these dangers have been happily got through, the scar or cicatrix left after the burn has to be dealt with. This cicatrix becomes hard, dense, and cartilaginous (like gristle), and it is apt to contract, so as to occasion the most distressing deformities and difficulties; nor will repeated operations remove the tendency, even when every portion of the contracting texture has been cut away.

This tendency to contraction would seem to depend on the structure of the portion replaced. The cuticle or outer skin covering the cicatrix is very thick—thicker than the healthy cuticle; this is the chief difference between the healthy cuticle and the replaced cuticle; but there is a material difference in the deeper-seated true skin, as it may be called. The replaced true skin is composed of an exceedingly thick, strong, and inelastic band of fibrous tissue, in which only the smallest trace of the existence of the curly fibers of the yellow elastic fibrous tissue can be traced by the microscopist.

It is this latter element of the fibrous tissue of the healthy true skin which gives it its great elastic property, whereas the cicatrix, after a deeper burn, is composed entirely of a dense interweaving of the fibers of the white inelastic fibrous tissue.

I have had to treat some frightful cases of these contractions, where the forearm has been gradually drawn up to the arm, and the limb rendered useless in one who had to labor for her bread; and this, notwithstanding she had the intrepidity to undergo three painful and tedious operations, in the days when chloroform was not used. In another case of burn of the whole of the forepart of the neck, the angles of the mouth were drawn down, and the chin, until the latter was fixed to the chest. These accidents happen to cottagers' children, for the most part, who are left in a room with an open fire, without any guard, yet a guard might so easily be provided.

The contraction may sometimes be successfully opposed by keeping up extension with a splint, or, in case of the neck-burn, by a stiff collar, and by frequently moving the part during cicatrization, the scar being frequently lubricated with oil. If the fingers are burned, lint should be interposed between them, though they will still often adhere together. In burns of head or face, the edges should be drawn asunder by strips of adhesive plaster.

Still, in spite of all, contraction occurs; then the surgeon's knife must be resorted to, and even this is inefficacious, unless the operation lately recommended by Dr. Mitter can be performed, of dividing the cicatrix, dissecting it up wherever adherent, and dividing muscular fibers when necessary, and then filling up the gap with sound skin, by what is called the Taliacotian operation; that is, by transplanting a portion of sound skin from some neighboring part.

COLD—FROST-BITES—CHILBLAINS.

A person exposed to an intense degree of cold—and if that cold be accompanied with wind, which, as it passes, robs the body rapidly of its heat, and if the person be, moreover, exhausted by hunger, fatigue, or by watching—will first feel an irresistible desire to sleep, and the sleep terminates in death.

Great congestion in the veins is thus produced.

In a frost-bite, the part becomes of a dull red color, and then the part becomes lividly pale, insensible, motionless, and much shrunken. There is no local pain to warn the sufferer, and, in cold climates, a frost-bitten person requires to be told that his nose, etc., is dead.

Now, a frost-bitten part may either mortify without any signs of inflammation having arisen, or inflammation may arise, which becomes too violent, and so cause gangrene.

The degree of cold requisite to induce frost-bite, must be 10° below the zero of Fahrenheit's thermometer.

The power of resisting cold depends in a great degree on the temperament. The soldiers of France and Italy bore the cold of Russia, when fighting under Bonaparte, better than did the Dutch and other inhabitants of cold climates.

Treatment.—Frost-bites should be rubbed with snow, then with cold water, in places not heated by fires. If this be judiciously done the part recovers, with only slight swelling or tingling in the

part, perhaps the formation of vesicles, with a scaling off of the scarf-skin. The part remains, however, weaker and more sensible to cold than before.

To combat the sleepy or comatose state, we should rub with snow; then, after sensibility is restored, with dry flannel. Put the sufferer into a bed in a room not heated by fire, throw up an injection of water and salt, and of oil of turpentine, and give some wine and water as soon as the power of swallowing has returned.

After these, mild cordials and nutriment. The great thing is to avoid inducing too high an action—inflammation, in short.

If a frost-bitten part be injudiciously and suddenly exposed to heat in any shape, gangrene is almost sure to follow, and the part may become black and dry in a very short time.

The best treatment here would be by applying snow or cold water, and then evaporating (spirit) lotions. These may prevent the gangrene; and if the gangrene be already formed, they should be used as long as the mortification seems to be spreading.

Then poultices and stimulating ointments must be resorted to.

Chilblains occur readily when a part previously very cold is exposed too suddenly to heat; it is an inflammation without power of resistance in the part.

They may be classified, according to degree, into a kind with the skin red and slightly swelled, with more or less of itching, tingling, pain, and lameness; a second kind comprises those attacks attended with vesications, and a bluish or purple skin; and a third, in which there are ulceration and mortification.

The toes, hands, nose, and ears are most frequently attacked, and women, children, and persons of languid circulation are the greatest sufferers.

Treatment.—In all the degrees I have been, I may say, uniformly successful by applying iodine, if applied to early enough. I employ a tincture of iodine, 30 or 35 grains of iodine to an ounce of alcohol.

To an ounce of this I add ten grains of cyanuret of potassium. With this the part affected is painted over by means of a camel-hair brush, or feather-end of a quill.

This application, however, must not be made over any part of the skin which is ulcerated, but only on the skin surrounding the open part.

The itching and swelling are speedily reduced, even by a very

few applications. These applications should be made not oftener than once at bedtime, and, perhaps, in some severe cases, once again in the morning.

The stimulant applications which have been recommended are numerous. Six parts of soap liniment with one of tincture of cantharides, mustard, turpentine, camphorated spirit, ammonia, frictions with new brine, and opiate applications have all been, in turn, strongly recommended; but the iodine is the best application.

When there are vesications, do not break them.

For ulcers or gangrene, with heat and pain, poultices are requisite; then, after a time, stimulating ointments or lotions, as the zinc ointment, and others of the same class.

DISEASES OF THE HEART—PALPITATION.

This disorder is characterized by strong, sometimes violent and tumultuous, movements of the heart, so strong as to be felt and heard by the patient, or seen by those who are near at the time.

A feeling of anxiety and distress, referred to the region of the heart, is usual, and sometimes fainting ensues.

Causes.—Females are more disposed than men, yet a good many men suffer who are of nervous temperament, or who have been subject to nervous diseases, hypochondriasis, melancholy, and epilepsy. Debility predisposes strongly.

The exciting causes it is important to know; for our treatment must depend, to a certain extent, on such knowledge, some of the exciting causes being curable.

Strong emotions, joy, anxiety, fear, sadness, anger, and violent exercise; debility, whether caused by exhausting diseases, or in any other way; excessive loss of blood, or great increase of natural discharges, abuse of purgatives, bad diet, abuse of intoxicating drinks, want of sleep, deep concentration of thought, dissipation of all kinds, excessive use of all kinds of pleasure, confinement in an impure air, or in close or crowded rooms.

Chlorotic females (from stoppage of courses) suffer much from palpitation. Spinal irritation it frequently accompanies, when there will be several other symptoms to point out the constantly acting cause, viz.: pains in the back, shooting forward or downward, or in various directions, and they may be increased, to-

gether with increased violent palpitations, by tight stays, etc. Pressure, or gentle tapping with the knuckles, will often point out the disordered point of the back. This kind of palpitation is common in females between the ages of fifteen and twenty-five.

Palpitations, which often set in previous to or after the commencement of the monthly periods, will again appear in females about the period of the cessation of this periodical monthly discharge, and they will attack those who labor under diseases of the womb, breasts, ovaries, or who are suffering from some wearing chronic ailment.

Persons may suffer for years from palpitations without any sensible effect for the worse appearing; but so violent an action of the heart, as may be witnessed in these fits of palpitation, does not continue for many years without inducing some organic changes in the heart, which may become much enlarged in its substance, and more and more violent in its impulses; while, at the same time, the disturbed heart's action may set up congestions, or determinations of blood to various organs, from which congestions diseased states spring forth, under which life sinks overpowered.

In all nervous palpitations, the urine is frequently copious and of a pale color, and the heart is usually quietest when the sufferer is taking exercise in the open air, or the mind is fully occupied.

Indigestion is, perhaps, of all causes, the most frequent, and some patients are never troubled with flatulence without a violent attack of palpitation, with possibly an intermittent pulse, following the dyspeptic state.

Palpitation is also one of the early symptoms of pulmonary consumption.

Simple palpitation without organic disease, may be distinguished from that attending organic disease, by the complete cessation of all distress after the fit is over.

Treatment.—This must vary with the state of the patient. In very full-blooded individuals, bleeding from the arm may be necessary, and cupping or leeching afterward; then lowering or nauseating doses of tartar emetic, one-eighth or a quarter of a grain, three or four times a day; but vomiting must not be excited, if avoidable; digitalis, or foxglove, or hydrocyanic acid should be given.

The local applications are plasters of opium, belladonna, henbane, or hemlock.

Low diet, repose, and quiet—both of mind and body—and aperients are requisite.

But palpitations in the nervous, delicate person demands very different treatment. Here preparations of iron, a nourishing diet, tonics, with change of air and scene, are necessary. With these tonics we must combine sedative medicines, which frequently are followed by very beneficial effects, as :

No. 165. Dilute sulphuric acid	10 to 15 drops.
Tincture of opium.....	5 drops.
“ of digitalis.....	5 to 12 drops.
Infusion of gentian.....	1 oz.

Two or three times a day, or :

No. 166. Carbonate of ammonia.....	5 grs.
Tincture of opium.....	5 drops.
Camphor mixture.....	1 oz.

Or this :

No. 167. Spirits of sulphuric ether.....	20 drops.
Tincture of opium.....	5 drops.
Carbonate of ammonia.....	3 grs.
Syrup.....	2 drs.
Water.....	1 to 1½ oz.

No. 168. Chloroform.....	20 drops.
Tincture of foxglove.....	10 drops.
Syrup.....	1 dr.
Distilled water.....	1 oz.

To be taken directly the palpitation comes on.

Other prescriptions can be given of a similar character; but when palpitation accompanies a disordered stomach, the patient should never be without the following drops :

No. 169. Tincture of cardamoms.....	} of each ½ oz.
Spirits of ammonia (sal volatile) ..	
Liquor of potash.....	
Tincture of opium (unless opium usually disagrees, then omit it).....	
Hydrocyanic acid (of the Pharmacopœia)	12 drops.

Keep this in a well-corked bottle and in a cold place, wrapped up in a paper. The dose is a tea-spoonful in water or mint-water, or camphor julep, and syrup may be added, to taste, at the time of taking.

One great object is, to assure the nervous sufferer, if we can truthfully do so, that there is no fixed heart disease, and that she, or he, may live for years, and need not be expecting the moment

to arrive when she may be cut off by sudden death. Nothing tends more than this assurance will to relieve the mind of gloomy apprehensions. The mind and body should be kept quiet; for any violent agitation of the one, or exertion of the other, is sure to aggravate the mischief, and many a sudden death has been caused from violent mental emotion, when there has been organic disease, as well as from bodily exertion.

Several applications of a sedative kind will sometimes tranquilize in a great degree :

No. 170. Soap liniment.....	20 oz.
Extract of belladonna, or of aconite.....	1 dr.
Cyanuret of potassium.....	10 grs.

Rub two tea-spoonfuls of this over the region of the heart, and repeat according to circumstances.

Chloroform may be applied also:

No. 171. Chloroform.....	2 dr.
Soap liniment.....	2 oz.
Mix.	

Rub in a dessert-spoonful once or twice during the palpitation.

The belladonna plaster has been serviceable. It is made by melting in a water-bath extract of belladonna and soap plaster, of each three drachms.

Some have been frightened by an intermittent pulse, but intermission of the pulse often attends while the person is perfectly in health, and the pulse becomes regular only when disease is set up. Others, again, are alarmed by a pulsation at the pit of the stomach which resembles aneurism, and which has sometimes deceived medical men. This pulsation often depends on indigestion, and a gas-distended state of the large bowel, which runs across the body from right to left, just behind the pit of the stomach, and we may often remove the pulsation by a single effective purgative.

DARTING PAIN, OR NEURALGIA OF THE HEART.

This darting pain does not affect the breathing nor the circulation, as the disease called angina pectoris does; nor is it accompanied with the pain, which shoots to the arms and down to the fingers, in angina pectoris.

This is a nervous pain, and is more frequently dependent on

indigestion than any thing else. Strong tea has been supposed to have brought it on, when it has been drank to excess. The treatment is similar to that for palpitation.

STRUCTURAL DISEASES OF THE HEART.

These are very important, and demand the most energetic and judicious measures to be adopted without delay. But no one but medical men can correctly make out the exact site and nature of these diseases, for auscultation, or "sounding," by the stethoscope is essential.

We will put down the chief distinguishing features, so far as that can be done without the stethoscope.

The first is inflammation of the bag in which the heart is contained (the pericardium), and its inflammation is called pericarditis.

PERICARDITIS, OR INFLAMMATION OF THE BAG CONTAINING THE HEART.

This is generally connected with rheumatism.

Shiverings at first; then pain, more or less acute, under the left nipple, and toward the lower part of the breast-bone; this pain extends toward the left armpit and arm, and down the left arm to the elbow or wrist. The pain may be darting, or else dull, and some complain not so much of pain as of a feeling of oppression. When it is present, deep pressure between the ribs, close to the breast-bone, will increase, or even cause it to be manifested, when no pain was previously complained of; lying on either side will increase the pain.

Violent and irregular palpitations are manifest on placing the hand over the heart.

Fever attends; a pulse full, frequent, hard, regular, and *jarring*, or it may be a small, irregular, unequal, and rapid one; there is great shortness of breath, with a sense of terrible oppression and restlessness, and a want of fresh air; the skin may be dry and hot, or bathed in sweat; the countenance pale, and expressing great terror.

Further symptoms are sighs, sobs, hiccups, convulsions, delirium on awaking from sleep, frightful dreams, or else no sleep at all.

The breathing becomes more and more laborious, the counte-

nance livid, the eye glassy, the skin covered with a clammy sweat; the agonizing anxiety increases, until death frees from further suffering.

This disease may terminate in recovery, or in a chronic form of the disease, or in death. But complete recovery is rare; for the two surfaces of the membrane lining the heart, and the interior of the bag, may throw out fluid, forming dropsy of the pericardium, or they may adhere to each other, thus forming a heavy drag on, and impediment to, the future free movements of the heart. (See CHRONIC PERICARDITIS.)

Causes.—The predisposing causes are hereditary tendency to gout and rheumatism. The male sex, from twenty to thirty years of age, are most liable.

The exciting causes are cold, and, as already has been said, the extension or the transfer of the rheumatic or gouty action to the heart.

Treatment.—This should be as vigorous as the foe is dangerous to life. The inflammation must be subdued with as much rapidity as possible; after which we must promote the absorption of effused matters.

If the patient be strong, bleed from the arm to the extent of as many ounces of blood as can be borne without fainting; then cupping or leeches; but if the patient have been debilitated or lowered by the preceding rheumatism or gout, then cupping or leeches, and no blood from the arm.

Give directly these powders, until the gums become red and tender, and begin to swell, with foul breath:

No. 172. Calomel	3 grs.
Opium	$\frac{1}{2}$ gr.
Or of Dover's powder	5 grs.

Every second or third hour. If the powders purge, give more opium, or some of the astringent medicines recommended in DIARRHEA, the object being to prevent the mercury from running off, as it is called, by the bowels, for then it will not act specifically against the inflammation.

Tartar emetic, a quarter of a grain, may be added to each powder with benefit.

If rheumatism be present, twenty drops of tincture of colchicum seeds may be given every four hours.

The diet must be low.

A blister to the chest-bone, and the vesicated surface may be kept open by dressing it with savin cerate, a common preparation of druggists.

CHRONIC PERICARDITIS.

This generally follows the acute, and similar symptoms are present—difficulty of breathing, palpitation, uneasiness or slight pain in the heart's region; the person lies only on the right side; low fever or hectic, debility. A serous or watery fluid is effused into the bag surrounding the heart.

Treatment.—Cupping and leeches; blisters with calomel and opium, as above stated. If rheumatism be severe, give twenty drops of colchicum, as was advised above; if debility prevail, a more generous diet, with ammonia, alkaline bicarbonates every three or four hours, will be proper.

WATER IN PERICARDIUM.

The signs of this state are obscure. Weight or oppression in the region of the heart is complained of; there is difficulty in breathing, and the sufferer is obliged to sleep in a sitting or erect posture; for, if he attempts to lie down, he feels as if he were about to be suffocated; the face becomes of a dusky, livid, or bluish hue; there is a tendency to faint, the ankles swell, and the pulse is frequent and irregular.

Now the causes of this effusion have been either inflammation or some mechanical obstruction to the circulation of the blood through the heart and lungs.

Treatment.—The ordinary treatment pointed out in dropsy must be followed here. We must give both sharp purgatives to bring away the serum or water, and we must resort to diuretics to get rid of it, through the kidneys.

Elaterium is one of the most active expellers of watery motions we can employ, its great drawback being the distressing sickness which so often, and in some cases invariably, follows it.

Still, such are its effects, that many patients bear the suffering of sickness in order to have the water expelled.

A quarter of a grain of elaterium, with a little opium, or a drop of creosote, or a drop of hydrocyanic acid, should be given, and repeated according to effects.

Cream of tartar is another good remedy—half an ounce or more, in the course of the day, mixed with ginger and sugar, and plenty of water.

Epsom salts, half an ounce with a drachm of tincture of jalap, once or twice daily, will procure watery motions.

Diuretics are of various kinds :

No. 173.	Acetate of potash.....	30 grains.
	Spirits of nitrous ether	40 to 60 drops.
	Infusion of horseradish or of broom.,	1½ oz.

Three or four times a day. A pill at night.

No. 174.	Blue pill.....	} of each 20 grains.
	Compound squill pill.....	
	Compound soap pill.....	

Make twelve pills. Two of these to be taken every night.

INFLAMMATION OF THE HEART.

The inner membrane is here inflamed, and the signs are those common to heart diseases—anxiety, oppression, and fainting; no pain usually; skin hot and dry; thirst, restlessness, fever.

The heart's action is violent and irregular; the pulse may be small, feeble, and intermitting in some cases. The anxiety, restlessness, difficult breathing all become very distressing, and the face quite livid.

Treatment.—When this serious disease is not fatal, it may leave behind it deposits on the valves of the heart, which, in course of time, prove very embarrassing, and abridge the sufferer's life.

The treatment may be gathered from what has been said in ACUTE INFLAMMATION OF THE PERICARDIUM—bleeding, either general or local, and repeated according to necessity; cupping, leeches, the warm bath, rest; the calomel powders, so as to touch the gums; issues or setons.

DISEASES OF THE VALVES OF THE HEART.

To distinguish disease of the valves, and more especially to distinguish which valves are affected, requires a knowledge of auscultation, and the general symptoms all resolve themselves into such as arise from the impeded circulation of blood through the heart, and from the effects of this impediment—namely, a drop-

sical effusion—the dropsy appearing first in the legs, but afterward in the chest or belly.

Treatment.—We must regulate our treatment by the varying states of the patient; but our treatment must be gentle, and there is no occasion here to try and salivate, for inflammation has disappeared some time.

In some cases of urgent dropsy, I have relieved the patient wonderfully, for a time, by acupuncture, which means introducing needles into the dropsical swelling at different points. If the needle point be introduced in a rotatory manner, no pain nor annoyance will be felt; when the needle is withdrawn, a drop of fluid appears from each puncture, and in a few hours much fluid drains away, to the relief of the breath.

ENLARGED HEART—HYPERTROPHY.

Symptoms.—Palpitation, with a strong, upheaving impulse; the pulse will be full, strong, and frequent, in one kind of enlarged heart, and it will be small in another.

Slight difficulty of breathing, increased on exertion; a good color in the face; in severe cases there will be headache, giddiness, flushed face, bright eye, and signs of blood being determined to the head, and discharges of blood from the nose, or from piles, appear occasionally. As the disease advances, there may be a puffiness of the face, and the swelling extends to other parts.

Causes.—Violent and straining exertions, too great fullness of the blood-vessels in the body, emotions of the mind, long-continued palpitations, certain chronic diseases of the lungs.

Treatment.—This disease may continue a long time.

Perfect rest of mind and body must be enjoined. According as the attending signs require, the diet should be spare, and blood may occasionally be taken away to relieve difficulty of breathing, or to diminish the great impulse of the heart. Sedatives are useful, as,

No. 175. Bicarbonate of potash.....	20 grs.
Tincture of opium.....	5 to 12 drops.
“ of digitalis (foxglove) ..	5 to 10 drops.
Distilled water.....	1 ounce.

Two or three times a day.

Belladonna liniment, or plaster, will sometimes allay the inordinate action of the heart.

ATROPHY OF THE HEART.

As enlargement proceeds from an increase of substance of the heart, so this atrophy depends on a thinning of its fibers. The heart's pulsations are small and feeble, and the upheaving or impulse is weak and feeble to the hand. Great tendency to fainting.

Causes.—The male sex predisposes—age about fifty; habits of intemperance; exhausting diseases.

Treatment.—Nutritious diet—tonics, steel, infusion of gentian, quinine, or stimulants, sal volatile, ammonia, etc.

There is no cure, so we must watch most carefully to prevent mischief.

DILATATION OF THE HEART.

In this complaint the cavities called the ventricles are dilated, and the symptoms are those indicating difficult transmission of the blood through the lungs and heart.

It is caused by debility, by diseases of the lungs, and by long-standing valvular disease.

Treatment must be adapted to the predominating state; if there be much fever or excitement, lower the system cautiously by gentle aperients, a modified diet, diuretics, and saline medicines; but if debility prevail, and the difficulty of breathing seems to depend on some debilitating cause, then support with a nutritious though non-stimulant diet—allowing wine, if it seem necessary.

Rest and quietude are indispensable adjuncts to treatment; and, in most heart diseases, the patient will do well so to arrange his dwelling that he may have no stairs to ascend or descend at any time.

THE BLUE DISEASE.

The color of the skin, lips, and mouth is blue; the skin is everywhere cold; there are fits of great difficulty of breathing, which seem very alarming; palpitation is frequent; feeble and irregular pulse; fainting on slightest exertion, or on the mind having been excited; dropsy, too, is an attendant. This state depends on the existence, from birth, of a communication between the two sides of the heart, which is usually closed up after birth, and which admits venous blood into the left side of the heart without going through the lungs. The result is usually death during a fit of

dyspnœa, at an early age, though some cases are on record where the sufferers have attained the age of fifty-seven.

Treatment is obviously palliative—rest of body and quietude of mind, pure air, warm clothing, cautiously regulated diet, careful attention to the functions of the stomach and bowels.

ANEURISM.

This is a sac filled with blood, and communicating with an artery, by the rupture or dilatation of which it has been produced; some disease of the artery has preceded. If it is situated on a limb, it appears as a pulsating tumor or swelling in the course of an artery.

But it may be situated within the chest, near the heart, or within the belly; it there produces symptoms characterized by signs of pressure on, or irritation of, the neighboring parts. The aneurism and its site are often very difficult to be made out satisfactorily, and the treatment is chiefly surgical. The subject is mentioned here only to caution those who are so afflicted, or who have reason to suspect such a state, to maintain as perfect repose of mind, body, and of the part itself, as may be possible; to observe temperance, and keep up a free state of the bowels; to meet urgent symptoms, such as difficulty of breathing, by a small bleeding; or to keep down palpitation, or too great an action of the heart, by giving of either of tincture of foxglove and henbane, or colchicum, ten drops of the former, and twenty or thirty of the latter, two or three times a day, and locally by belladonna plaster.

Belladonna liniment, or an embrocation of chloroform, may be rubbed in night and morning—a teaspoonful of either.

INFLAMMATION OF THE VEINS—PHLEBITIS.

An inflamed vein, when superficial enough to be visible, appears to the eye as if a knotted cord were running up the leg in the course of a vein; the line becomes red, and painful on pressure; the parts around swell; and if the attack be acute, fever soon makes its appearance—and of a typhoid character, too.

This fever is more particularly deadly in those cases of phlebitis which supervene on injuries and wounds after childbirth, and after surgical operations.

After repeated shiverings, profuse sweats, coma, great debility and anxiety, a weak, frequent, and often intermitting pulse, a yellow, muddy-colored skin, profuse vomiting and purging, and speedy death. In other cases symptoms are often very mild, and the constitutional affection is trifling.

The matter, in those instances of inflamed vein which follow wounds, childbirths, forms what are called consecutive or secondary abscesses; and they are situated variously—sometimes occupying a joint, sometimes the head, chest, or belly; in which event we shall have delirium or coma, with fever, if the head is the chosen site; or we shall have difficulty of breathing and cough, if the chest; and pain or tenderness in the belly, if the belly.

The accompanying febrile symptoms are of a deeply typhoid character, and rapidly run their course.

Sometimes the joints are the sites for the deposition of matter. Inflamed absorbents may be mistaken for inflamed veins in the limbs; but the vein feels like a large, hard, and knotted cord, running in the course of the vein; while inflamed absorbents appear like hard, red lines under the skin, leading to a gland.

Causes.—A bad habit of body predisposes; scrofula powerfully disposes; or too low a state of the vital powers; wherefore it is now very unusual to lower the powers of patients by bleeding, hasty meddling, etc.

Cold, and previous injuries or surgical operations, or childbirth, are efficient causes.

Treatment.—We may hope for recovery when the case has been excited by cold, and has originated in a good constitution; but secondary abscesses are usually fatal if they form internally, though they may be managed often when they form in the external parts or the joints.

We must adapt our treatment according to the state of the general symptoms. In mild cases, leeches in the course of the vessel may be applied; but the lancet must be avoided. Gentle aperients, salines, cold applications or warm fomentations to the part, whichever of the two may be most agreeable to the patient.

If the accompanying fever be inflammatory, the calomel, opium, and tartar emetic powders:

No. 176. Calomel.....	20 grs.
Tartar emetic.....	1 gr.
Opium, powdered.....	5 to 8 or 10 grs.

Mix and divide into ten powders. One three times a day, until the gums become tender. With these powders, saline medicines.

But if the fever be typhoid, then wine, brandy, ammonia, camphor, ether, etc., with opium at night. The constitution must be boldly supported, the more typhoid the symptoms are.

Sometimes calcareous concretions form in veins, by degeneration of the clots or coagulated blood within them.

These are called phlebolites, and must be removed by the knife.

Veins also become varicose, and cause so much swelling of the limb as to prevent walking; they cause ulcers to form, and a vein becomes thin, and bursts, when a hemorrhage or bleeding ensues from the part, and even becomes fatal.

Treatment is either palliative or curative; the former consists of measures calculated to prevent further distension, and to induce contraction of the vein.

If one or two veins are affected, apply pieces of leather, spread with soap plaster, firmly over them; but if many smaller veins are enlarged, the whole limb should be supported with a calico or India rubber bandage, or with a laced stocking, which should be taken off every night on lying down, and reapplied every morning before leaving the bed.

Friction with a flesh-brush, or with gloves, or with various liniments, may help the cure; but the pressure, in rubbing, should be always in the direction of the vein.

The bowels should always be kept rather open; hard motions and the consequent straining are very prejudicial.

If, in spite of all these, the disease progresses, then the surgeon must take the case in hand.

RECTUM—STRICTURE OF.

This intestine is the lowest bowel in the body, and a mechanical obstruction in it is often a fertile source of distress. Stricture of the rectum has been divided into spasmodic and organic, the latter forming a permanent obstruction to the passage and expulsion of the excrementitious matter.

There are frequent and sudden calls to stool—two, three, or more, every day. The patient feels as if the bowel urgently required emptying; yet, after much straining, nothing but a little wind, with mucus or blood, can be passed; but, every two or three

days, fecal matter, in the shape of small pellets, of hard consistence, and in long, round, angular, or flattened portions, of small diameter, if soft, is discharged.

This state may last a certain time without much constitutional derangement; but, at length, the patient loses his appetite, and becomes pale, emaciated, and hectic.

The stricture is commonly situate at from two and a half to four inches from the outward opening.

Treatment.—This disease is, by many, left exclusively to surgical management; yet there are, doubtless, many cases where medical treatment is of the highest value. It is very probable that a never-ceasing use of irritating purgatives may have given rise to the first tendency to contraction or stricture.

The bowel has been kept constantly empty, and in an irritable state, by the purgatives, thus depriving it of the natural dilatation which is effected by the fecal matter lying in and passing through the bowel.

We may try gentle laxatives, such as castor-oil, manna, cream of tartar, lenitive electuary, or the infusion of senna and gentian combined.

With these, injections of unirritating nature, to wash out the bowel. Mechanical dilatation by a candle or a bougie is often requisite; but the introduction of a bougie requires care and caution, as does also the gradual increase in the size of the bougie

FISSURE OF RECTUM.

This painful disease commences insensibly in some cases, more rapidly in others.

The passage of the stools is attended with heat and smarting, and, as the fissure increases, with violent pain, which often continues for a long time after every motion; indeed, the pain may hardly cease at all, and it is often increased by coughing, by any exertion, or when making water.

On separating the lower orifice, while the patient is straining, a narrow cleft may be observed, with its bottom red and its edges slightly swollen and hard. A very painful spasm of the circular muscle of the anus is an accompaniment, and adds greatly to the suffering.

Treatment.—Cure is usually affected by dividing the fissure;

still, great relief has been given, and a cure has been effected by remedial means. A belladonna ointment may be rubbed in externally, every night and morning; it should consist of sixty grains of extract of belladonna and seven drachms of spermaceti cerate, or any simple ointment. Sir Benjamin Brodie objects to the use of belladonna smeared on a bougie, or thrown up as a lavement, because, when thus administered, it has acted injuriously on the brain. He gives aperients to prevent hard stools, directs a bougie to be introduced before going to the water-closet, and orders an opium suppository at night.

Opiate Suppository.

No. 177. Powdered opium..... 1 or 2 grs.
 Soap or spermaceti..... 10 grs.
 Mix, by beating.

PROLAPSE OF THE RECTUM.

This is a bearing down and protrusion externally of the lower bowel, after each motion.

Considerable hemorrhage (bleeding) attends, so that the disease is considered to be piles, until accurate examination of the protruded portion demonstrates the nature of the affection.

Treatment.—Here again the surgeon's knife is called into requisition; yet there is no doubt that much good may be done by ascertaining the cause or causes which have originated the disorder, and by removing them.

All straining must be prevented by giving gentle laxatives, attending to the diet, that it be unirritating, and not leaving a large residue to pass through the bowel. When the bowel is down, we must return it by gentle pressure on the center of the prolapsed part; but if this latter be too swollen, hot, and reddened, then apply a piece of muslin on the tumor, wetted with equal parts of tincture of opium and of sulphuric ether, and allow a rapid evaporation to take place. This, Dr. Copland says, he has never known to fail, especially in the cases of children.

The general health must be attended to, and the secretions and excretions kept in as healthy a state as possible.

To give tone to the bowel, and prevent its descent, throw up cold injections into the rectum, each containing sixty drops of the tincture of muriated iron.

FISTULA IN ANO

usually demands the surgeon's aid; but still much good will be effected by regulating the bowels, diet, etc.

GONORRHEA.

The urine is secreted (formed) in the kidneys; thence it descends down a tube, called ureter, on each side, into the bladder; from the bladder it is discharged externally through a passage called urethra, the latter passage varying from eight to eleven inches in length.

This latter passage—the urethra—is often inflamed, and the disease is called urethritis. It is then very irritable, and there is much pain on making water. (See INFLAMMATION OF URETHRA.)

But there is a specific inflammation of this passage, caused by contagion, mostly from some impure or diseased woman, when a vicious or drunken man has exposed himself to it. This disease is called clap, or gonorrhea, and its symptoms are, first, an itching at the external end of the passage; the itching becomes pain, especially on making water, and there is usually some swelling; then a discharge of a whitish color, more or less thick, which becomes yellowish or greenish, if there is much inflammation.

Uneasiness and pain are felt along the course of the passage, and blood is sometimes discharged. If the uneasiness extend to the bladder, then the symptoms of irritable or inflamed bladder are added, or inflammation and abscess may take place in surrounding parts. The urine comes out in a smaller stream than usual.

Treatment.—Drink a tumblerful of water, or barley-water, five or six times a day; and if some eight or ten grains of carbonate of soda or potash be added, so much the better. Live low; no meat; and either fomentations or cold lotions, or cold-water cloths to the part will be useful.

Keep the parts clean, and free from discharge; take an aperient every second day. After a few days, when the pain and scalding are diminished, take twenty to thirty drops of balsam of copavi, three or four times a day, in water, made into an emulsion with some powdered gum arabic. If these drops increase the pain, discontinue them, and treat as for inflammation. (See INFLAMMATION OF URETHRA.)

No exercise should be taken; rest is necessary to prevent local inflammation. If the discharge continues after the pain and scalding are gone, try an injection, night and morning, of sulphate of zinc, thirty grains to a pint of water. The fluid need not be thrown far along the canal—four or five inches are enough.

For sudden pain at night, called *chordee*—or whenever it occurs, as in some cases it is a frequent attendant, and causes great distress—a draught of twenty drops of tincture of meadow saffron, and ten or fifteen of the tincture of opium, in an ounce or two of water, should be given every night, or even three or four times a day, according to the violence or frequency of the attacks, for four or five days, taking care to prevent costiveness from the opium by giving an occasional aperient.

VENEREAL DISEASE.

This also arises from contagion, and, if neglected, may lead to great mischief.

A small pimple usually first appears on the foreskin, which becomes an ulcer, or an ulcer appears under the foreskin. This ulcer seems as if scooped out of the part, and has usually a hard, circumscribed edge.

Sometimes inflammation shows itself around the ulcer. A swelling of a gland in one or both of the groins may follow.

Treatment.—As soon as the ulcer is seen, put lint wetted and kept wet with water on it, and cover the lint with oilskin. Take five grains of blue pill three times a day, till the gums begin or are about to swell, or become tender. If these pills seem to act on the bowels, a quarter of a grain of opium should be added to each pill, the object being to affect the constitution with the mercury, and not purge the bowels.

If the bowels continue to be purged, discontinue the pills, and rub into the inside of the thighs, every night, sixty grains of mercurial ointment, until the gums show the effect of the mercury, then stop; use gargles to the mouth, and take sarsaparilla drink, or bitters mixed with camphor julep. Under this treatment the ulcer heals, and there may be an end to the disease.

But sometimes inflammation attends to a considerable degree, and, in some warm climates, is of a very threatening character, having a strong tendency to mortification.

In such cases, the inflammation must first be reduced, by poultices, or fomentations, or leeches; low diet, rest, and purgatives. (See INFLAMMATION and MORTIFICATION, Chapter IV.)

The swelling in the groin must be treated with cold lotion, and sometimes with leeches applied near the swelling, so as to prevent it from softening and forming matter; but if matter do form, it should be let out, and a poultice applied.

Usually, as the gums become tender, the swelling subsides.

In some constitutions, the poison is absorbed into the system, and what are called secondary symptoms follow, viz.: sore throat, and ulcers in the throat, or dark, copper-colored eruptions on the skin. When this happens, a gentle mercurial course may become necessary; and the sarsaparilla drink must be taken, a pint a day.

Whenever a person is taking, or is under the influence of mercury, care must be added to avoid catching cold.

STRICTURE.

It is necessary to mention this disease, which is a contraction, permanent or temporary, of one or more parts of the urethra, and may endanger life by causing a total retention of urine in the bladder, requiring often an operation by a surgeon.

Symptoms.—The earliest symptom is the retention of a few drops of urine after making water; then some irritability of the bladder, causing the person to make water often in the night. The stream of urine is forked, spiral (corkscrewy), flattened, or scattered, or it may come away even in drops.

If any error in diet be committed—if acid drinks, old or sour beer be taken—a spasmodic stoppage may occur, and no water be expelled at all, while the bladder is making distressing efforts. Stricture follows a clap, or gonorrhea, sometimes.

There are two kinds of stricture in the urethra—the spasmodic, which arises suddenly, from error in diet or cold; and when the spasm goes off, the urine is expelled in as full a stream as usual in health. The other kind is the permanent, and, in that case, there exists a permanent obstruction to the flow of the urine, the urine always flowing out in a small and impeded stream. But sometimes a spasmodic state is suddenly superinduced upon the permanent stricture or obstruction; then great danger often arises, and nothing short of a surgical operation will relieve.

Treatment.—The spasmodic kind is to be treated by warm bath, rubbing in some liniment or ointment of belladonna, all along the passage underneath. A bougie must be tried to be passed through, while in the bath, but if it will not pass, do not persevere, or the part will be irritated.

A bougie is made of linen, rolled into a circular form, and dipped into wax mixed with lard; it is flexible, and well adapted to pass all along the urethra.

In the permanent stricture, our reliance must be on the bougie, and a small-sized one must be passed (gently, so as not to cause pain) through the stricture (or obstruction), at first once a day, or once in two days, and allowed to remain for six or eight or ten minutes, and the time lengthened to half an hour, or an hour at last, or even longer. After the small one passes easily, try to introduce one the next size larger, in the same manner, until a full-sized one, No. 13, can be borne, and that will suffice.

Some persons can never make water without previously introducing a bougie; and if its use is left off, the stricture may return.

Care as to diet—nothing irritating, no acids or sour drinks; all intemperance is dangerous, all excesses, all irritations. The bowels are to be kept gently open always, and the urine well diluted by water or barley-water, and some thirty grains of carbonate of soda or potash will be useful, night and morning, or after dinner, or the effervescing draughts.

ENLARGEMENT OF THE PROSTATE GLAND.

There is a gland situated at the neck of bladder, and it may become enlarged, which generally happens in elderly people, and in those disposed to scrofula.

Clerks in offices, who lead a very sedentary life, often generate a predisposition to this disease, and the discharge called clap sometimes causes this gland to enlarge.

The symptoms are some difficulty in making water, with, perhaps, pain. This difficulty progresses as the gland continues to enlarge, and the bladder makes more and more powerful efforts, until at last it can retain but little urine; there is a sense of uneasiness or weight low down in the perinæum (that part of the body on which we sit), and if a bougie, or any similar instrument, be introduced, it will pass readily till it reaches to near the entrance into the bladder.

There are other modes of ascertaining this enlargement, but they require the practical knowledge of the surgeon.

Treatment.—Generally, all we can do is to remove irritation or inflammation (if either exist), by warm baths, leeches, and fomentations to the perinæum, and to keep the urine *as unirritating as possible*, by the alkalies and diluting drinks; twenty grains of carbonate of potash or soda, every night and morning, in a tumblerful of water, will prove serviceable. The diet must be carefully looked to.

I was once called to an elderly man, who had been a barrister's clerk all his life, and who was in a comatose state, from the urine having been retained too long without a surgical operation. He had for years suffered from enlargement of the prostate gland, and the fatal attack was brought on by his incautiously drinking only one glass of old beer, which was rather sour. Spasm was added to the mechanical obstruction, which always existed. No operation was proposed till it was too late to save life.

The barrister, with whom this gentleman had lived for many years as clerk, died also from this disease. Sedentary habits in both were the causes in action.

Men so affected must take care what they eat and drink.

CHAPTER V.

DISEASES OF WOMEN

It is proposed here to describe and treat those diseases peculiar to the female sex, and which have not been described in the preceding pages.

We must bear in mind that women are endowed with great susceptibility to nervous excitement; and that, although we must treat fevers or inflammations occurring in them on the same general principles as those which have been laid down—namely, those of lowering action in the usual way, or of supporting, when support may be necessary—still, we must not forget that they do not bear active measures, of a certain character, so well as men; and that although there may often be a show of high and threatening inflammatory symptoms, yet there is a want of sustaining power, which will prevent blood-letting and other exhausting means being recovered from so rapidly as in the parallel case of the male.

CANCER IN THE BREAST AND WOMB.

This fearful disease has been treated of in the preceding chapter, as far as general principles are concerned.

And, first, of cancer of the breast.

It commences generally as a hard, circumscribed, movable swelling in the breast, which is so painless as to have escaped attention, until discovered by accident. After an uncertain time it increases in size, and the circumferential outline is irregular. And now the most distressing symptom of all is complained of; namely, peculiar, violent, darting pains, which occur in fits or paroxysms, and more violent at the time of the monthly period.

This pain is so unfailing an attendant on cancer, as to be considered almost a diagnostic or distinguishing characteristic; still

there are exceptional cases (probably very rare ones), in which there has been no pain throughout the progress of the disease.

The writer can testify to this, and also to the universal surprise and, he fears, concealed incredulity with which his description of the painless case was received.

The nipple sometimes bleeds a few drops, and generally with local relief. And now the cellular texture around the swelling diminishes, so that the diseased breast becomes smaller than the sound one, while the nipple is retracted or drawn in, and the skin around it puckered.

In some cases, this deposit of cancerous matter is general throughout the gland, and the whole breast becomes a hard mass.

The swelling next forms an adhesion to the skin above, and to the muscles below the tumor. It becomes fixed and immovable; then it ulcerates, and becomes open cancer.

The glands in the adjoining armpit, and sometimes those in the neck, enlarge; and hard lines, like cords, can be felt under the skin, running from the tumor to the glands. The bulk of these glands presses on the blood-vessels in the armpit, causing obstruction to the circulation of the blood in the arm, whence the swelling, as if from dropsy, of the arm.

The cancerous action spreads to the ribs and to the chest; fluid is formed, and difficulty in breathing is added.

The flesh wastes away, and the sufferer at length dies exhausted. According to Sir Astley Cooper, cancer requires from two to three years to attain its full growth, and life was usually destroyed in from six months to two years afterward.

But, instead of a tumor, there may be felt around the nipple little knobs or tubercles, which extend to the skin of the head, neck, and shoulders, and soon become painful. At first they are of a red color, then a yellowish transparency occurs in the center, and then they do not form pus or matter, but they break and change into a corroding ulceration.

The discharge from cancer, in every form, is very fetid.

No injury or bruise, etc., is necessary to set this dreaded virus into action.

It becomes of great importance to make out, decidedly, whether a tumor in the breast is cancerous or not; for many are very hard, as hard as scirrhus, and yet are not of malignant nature; but a stony, hard, movable swelling, in its early stage, and the

shrunken gland and drawn-in nipple, afterward, are the signs of cancer. The age about forty; the sallow complexion, the weakness and bad habit of body, the darting pain; and the history of patient's mother or sister having suffered will assist us in forming our opinion.

Still, there are sources of fallacy against which we must guard. The cancerous deposit may be attended with common inflammatory action in the parts surrounding; then pain, tenderness, and swelling will be complained of, while the usual well-marked outline and hardness are no longer visible, and we may suppose the case to be merely one of chronic inflammation.

Then, again, cancer may occur earlier than at the age of forty; and also our remedies may so reduce the swelling as to make us fancy that the scirrhus, cancerous deposit has been removed. Of treatment we have spoken in the former chapter, and little satisfaction can we expect from the curative influence of medicines; still, nature, in some few cases, allows of a prolongation of life, and the cancer cells may, from some unknown cause, cease to propagate, when the growth would shrink, leaving a punctured cicatrix or scar; or the cancer cells may undergo a fatty degeneration, or the cancerous deposit may, like the tubercular, undergo a change into a chalky or putty-like mass, with the skin puckered over it.

Many a large, hard swelling has been mistaken for cancer, and the error would be of little consequence, if caustics of all kinds were not being continually applied, to the exhaustion and discomfort of the sufferer.

Treatment.—For the local treatment, pressure should be steadily persevered in; and if this can not be borne, Dr. Arnott's intense cold should be tried; and this cold seems to act both in producing a local anæsthesia or prevention of sensibility to pain, and in checking the progress of the tumor.

The extirpation of the tumor will be alluded to after the description of cancer of the womb.

As to cancer in the womb, there is considerable chance of making mistakes. There is one polypous growth, called cauliflower excrescence, which is confounded with cancer; but any of the kinds of polypi in the uterus may, by their exhausting discharges, produce such general symptoms as would give rise to the suspicion of the presence of cancer, though the local symptoms do not correspond.

To attain the nearest approach to certainty, the medical man must use an instrument called a speculum, which enables him to see the neck of the womb; while others can only guess that there is cancer at its destructive work, when a variously-colored discharge takes place from the vagina, which discharge is singularly fetid—indeed, so peculiar, that many a surgeon recognizes, almost at once, by it, the foe he has to deal with. Besides this discharge, there are the characteristic darting pains, which have been already alluded to.

(Refer to the article on the WOMB and its POLYPI.)

Induration, or hardening of the neck of the womb, has not unfrequently been mistaken for cancer, especially when pains have been present; but the pain is not of the darting kind, which so invariably characterizes cancer pains.

Treatment.—The general treatment has been mentioned, and the iodide of arsenic, in doses of one-sixteenth of a grain in a pill, two hours after dinner, and also twice a day—that is, in all, three times a day—is the remedy most relied on by the best authorities—taking care of the bowels and of the secretions generally, by occasional aperients.

The digestive functions must be kept in order by the infusion of gentian, with twenty grains of bicarbonate of potash, once or twice a day, between the pills.

For the pains, morphia must be given with the pills—a quarter to half a grain or more in each pill, according to the influence they seem to exert—taking care not to do more than deaden the pain, and not to cause constant drowsiness. Some recommend henbane, belladonna, or hemlock, for this purpose.

The smell from the discharge is so offensive, that injections must frequently be gently thrown up. The best is the following:

No. 178. Sulphate of iron.....	20 grs. or more.
Distilled water.....	$\frac{1}{2}$ pint.
Mix.	

For an injection, a fourth part to be thrown up at a time, and as often as may be necessary. If it cause pain, warm the fluid; if still painful, add extract of hemlock, ten grains to the half-pint, and mix well by rubbing all together in a glass mortar.

The chloride of soda is strongly recommended for this purpose, and may be thrown up frequently. The formula is this:

Injection of Chloride of Soda.

No. 179. Solution of chlorinated soda, made according to the United States Pharmacopœia		1 oz.
Distilled water.....		16 oz.

As to excision or cutting away of the breast, or of a portion of the diseased neck of the womb, opinions have been much divided. Dr. Vincent says, "The removal of unequivocal cancerous disease does not prolong life;" and Dr. Walsh says, "Excision can not be undertaken without imminent risk of putting the patient in a worse state than he or she was in before the use of the knife." Nevertheless, instances have been known of the disease not recurring after excision, and others, where life has been prolonged by the excision of an actively progressing cancer, while, thanks to chloroform, the operation may be painless.

Dr. Druitt seems to give the best directions, when he says: "An operation may be proposed to the patient (who should of course be informed of the precarious chance it affords) if the disease is movable and circumscribed, so that it can be cleared away by an operation with the knife. If, however, the skin is extensively tuberculated, and adherent to the scirrhus, if the surrounding fat and cellular tissue are implicated, if the tumor is firmly adherent to the parts beneath, if it is extensively ulcerated, or if the original disease is much less in degree than the cœxistent scirrhus of the adjoining lymphatic glands, or if the patient's health is fast sinking, or if there is any palpable internal disease, the operation should not be attempted."

A bleeding offensive mass may be thus got rid of, and an operation justified, even though cure is out of the question. Excision may be effected in three ways: by the knife, and every part must be carefully cut away; by caustic, in flat cancerous affections of the skin, or by a ligature.

Preparatory treatment is requisite before, and care after the operation.

BLADDER—FALLING DOWN OR PROLAPSE OF.

This descent of the bladder from its proper site may take place in various degrees. In extreme cases, I have seen what would have been thought the whole of the bladder protruding between the thighs.

The symptoms attending it are those resulting from irritation of the surrounding parts—pain, with bearing down; a discharge of whitish color from the vagina. As soon as the bladder has emptied itself, a sensation of ease will succeed.

There is a strong desire to make water during the night, and while in the horizontal position.

Both the womb and the bladder may fall down from their natural position, and they may remain in the vaginal passage, or they may protrude from the body; the womb must be distinguished from the bladder by the orifice or mouth, which is at the lower part of the womb. The stomach, too, is said to sympathize more with the womb than with the bladder; and nausea, vomiting, heartburn are often present when the womb is prolapsed, and absent when the bladder is alone affected.

The only safe mode of distinguishing is, by an accurate examination of the protruding part.

Treatment.—As relaxation of the passage (the vagina) is usually the disposing cause of this prolapse, it is often met with in women who have had large families; and when to this relaxation of the passage violent straining efforts are added, as in hard stools or in violent coughs, this descent of the bladder is not improbable. Our indications of treatment are obvious—to give tone to the part, to avoid straining efforts, and to apply some mechanical support.

The injection of sulphate of zinc, and of alum, thirty to sixty or more grains of each, may be dissolved in a pint of water, and a portion thrown up two or three times a day. The oak-bark decoction may be substituted for water. Then a pessary should be introduced, to support mechanically; its form may be oblong or globular, and the former is best borne.

The patient must herself discover what size and shape will best suit her, and the instrument must be occasionally gently withdrawn to be cleaned, and so returned. The zinc injection should be continued all the time.

PROLAPSE, OR FALLING OF THE WOMB.

Here we have pains in the back, a sense of distension, or of the presence of some foreign body in the vagina; a white, or more or less colored discharge is added; the stomach suffers by sympathy, a sense of bearing down, and a frequent desire to make water, as

if the bladder were affected. Now, these two last symptoms are relieved by the horizontal posture, and are increased in the erect; whereas, in the case of the bladder, the bearing down, etc., are increased when in the horizontal posture.

Local relaxation occurs, and the blood-vessels, in some cases, pour forth blood, which might obscure the case, and make one suspect simply profuse menstruation; that is, if no examination be made. This disease, if unchecked, may cause great mischief, and the womb will at length ulcerate, after long exposure to the air.

Treatment.—The strength must be supported by the usual means and all that seems wrong in the system should be corrected.

The local treatment is important; the injection of sulphate of zinc and of alum should be perseveringly used, made as strong as can be borne without pain; but the common uterine syringes of pewter, etc., are of little use. (See the article *WHITES*.)

But, before we resort to these astringents, we should reduce any tendency to local fullness or excitement, by giving rather low diet for three or four days; gentle laxatives, by enjoining rest in the recumbent position for a few days, and by calming the system.

Then the patient, having emptied the bladder and the rectum, must lie on the bed with legs and heels raised, and legs bent on the body; and if she can not obtain a medical man's assistance, she may be able to help herself by putting back the womb with a gentle though continued pressure on the center and lowest point of the prolapsed part.

If much pain ensue, and the womb has been long down, or is protruding forth of the body, further attempts must be desisted from; and the patient may rest satisfied if she has succeeded in placing the womb within the body, thereby preventing much annoyance, ulceration of the part itself, etc.

In minor cases of prolapse, when the womb lies down on the floor of the perinæum (the lower part of the body on which we sit), the part may be replaced readily enough; but it would again fall down when the patient leaves the recumbent position. To prevent this falling down, it is necessary to place some mechanical support in the passage, and this is called a pessary.

Pessaries, as used now, are usually constructed of various sizes and forms; some of which are circular, others flat, oval; others globular or oviform; and they may be made of vulcanized India rubber or of box-wood.

Many experienced practitioners object to the pessaries, and no longer use them ; and I can, against such a weight of authority, only mention my own experience ; but that has been so much in favor of them, that I do not hesitate to advise their use. That there are cases in which a pessary can not be worn without great pain and inconvenience, I am aware ; and, also, that much annoyance may result from not occasionally removing the pessary, cleaning it, and replacing it the next morning, before rising from the recumbent position, while advantage might be taken to syringe the parts well when the pessary is not worn. Still, there are many, I would say the majority of cases, where pessaries are of the greatest service. I recollect one instance of a lady, the mother of a large family, who seemed to be in perfect, almost robust health, yet never could walk above a hundred or two of yards without being stopped by a sense of increasing weight and pain, and a straining desire to make water, which rendered her unhappy, and led to her never attempting to walk, to the surprise of all around her, for she seemed to be in perfect health, having a good color. Her natural delicacy prevented her from consulting any one, until one summer she became somewhat intimate with my wife, and to her the tale of concealed suffering was told.

On being told, I, of course, divined that there was a prolapse of the womb. An examination was, after a time, consented to, when a prolapse was discovered, and a flat, oval box-wood pessary of proper size was introduced, and proper instructions how to manage it were given.

The very next day, to the patient's great delight, and to the astonishment of those who had seen her for years most obstinately inactive, she, unknown to me, walked a long way, without any suffering, though a walk, or any exertion is always imprudent, not to say hazardous, till the parts have got accustomed to the presence of the foreign body.

Another case was that of a poor washerwoman, with a large family totally dependent on the mother's labor, who consulted me for a prolapse, in which the womb was on the point of protruding into the open air. The poor woman could no longer stand at the wash-tub, and the family was much distressed. After a little preparatory treatment, I introduced a flat open pessary, and the next day, and, indeed, every day after, she was able not only to stand at the wash-tub, but to do a day's work without inconvenience.

The oval pessary should measure, in thickness, not less than one-third of an inch at its external edge, for otherwise the edge may cause injury; and it should be gradually thinner as it approaches the hole in the center.

A surgeon should introduce it, but, as there may be no one near, or the patient can not conquer her repugnance to divulge her annoyance, she may try what is called a medium size first; smear it with lard, put the finger into the central hole, and introduce it by its short diameter, till it fairly arrives at the end of the passage; then it should be gently turned so that each end of the oval may point toward the sides of the pelvis, with the hole facing the outlet.

If the pessary chosen be too large, pain and irritation will declare the fact; and if too small, it will either soon slip down and come away of itself, or simultaneously with the first motion or first urine expelled.

A clear-headed, courageous person may be quite able to manage this matter for herself, and the comfort felt will soon show whether the pessary is properly chosen or properly fixed. Its presence will not prevent pregnancy, nor will the husband be aware, probably, nor need he know, of any thing of the kind being fixed there.

There are some valuable mechanical contrivances to keep the womb in its place. They consist of something to project within the passage, which is connected with an apparatus fixed around the body, to which it is fastened. England's spring truss is a good instrument, where there is no rough work to be undergone, but it is necessarily somewhat expensive.

A shield pessary, invented by Mr. Duffin, is recommended by several eminent medical men.

THE WHITES, OR LEUCORRHŒA, OR FLUOR ALBUS.

This is a common complaint, and is often suffered to continue unopposed by treatment, because the sufferers can not overcome their repugnance to mention their state to any one.

It is a light-colored discharge from the female genitals, varying in hue from a whitish or colorless to a yellowish light-green, or to a slightly red or brown color; in consistence, from a limpid serum to a tenacious ropy substance; and in quantity, from a slight in-

crease of the healthy secretion to several ounces in the twenty-four hours.

This descriptive definition, given by Dr. Copland, is a very good one.

This discharge may come from the vagina or from the womb. Leucorrhœa may occur at any period of life, from earliest infancy to advanced old age, but it is most frequent between the ages of fifteen and fifty. In childhood and infancy, there is a general disposition in the mucous membranes to be irritated or inflamed, and to furnish a copious mucous or mucopuriform secretion. After the age of fifty this disorder is seldom observed, unless there be some coexisting organic disease.

The discharge may issue from the vagina, or from the womb itself; when from the vagina, it is caused, when acute, by inflammation.

The symptoms are heat and soreness in the passage, with, frequently, itching externally; pain or smarting; bearing down. A discharge of a thin acrid fluid appears soon after these symptoms, seldom later than a day or two; but soon it appears to get whiter, thicker, or yellower, more like pus or matter, and resembling cream.

Pain in the back and loins, with languor, lassitude, thirst, quick pulse, costiveness, and high-colored urine, and smarting on passing it, accompany or succeed the symptoms detailed above.

This discharge is not increased before or after the menstrual period. Rich living, luxurious life and indulgence, may irritate the body.

Treatment—in the acute stage is to bleed by lancet or leeches; laxatives, warm baths. If the constitution is debilitated, give tonics and generous diet, and as soon as the local heat and swelling in the passage are subdued; then the injection of sulphates of zinc and alum. The creosote injection is useful. Of creosote, thirty drops; spirits of wine, half ounce; and seven ounces and a half of boiling water; or introduce a piece of lint soaked in a liniment of Goulard's extract, Battley's laudanum, and mucilage of gum arabic, equal parts of each. But the female syringes in common use are objectionable; they are too small, and produce irritation, from the frequent necessity of withdrawing the pipe for the purpose of refilling the instrument. To the common domestic injection syringe, a proper vaginal pipe should be fixed; and by this any quantity may be thrown up without removing the pipe.

The fluid should be thrown up while the patient is in the recumbent position, and, if it is desired that the injection be retained as long as possible, the hips must be raised by a pillow. The most portable apparatus is a gum elastic bottle, holding ten or twelve ounces, with a gum elastic pipe fixed into it, half an inch in diameter, and about three or four inches in length, rounded at its extremity, and pierced with several holes. Where this is fixed to the bottle is an oval-shaped ivory shield, to which a soft piece of sponge is attached, and this is put to prevent the instrument from being introduced too far, and also to assist in retaining the fluid injected.

Medicated injections are never injected in sufficient quantity, says Dr. Bull, or retained sufficiently long.

With these remedies, we must look to the constitutional state, giving iron and tonics when the skin and complexion are pale, the digestion impaired, etc. The cold bath is useful, with dry rubbing afterward; the cold douche on loin or hips.

Cubebs and benzoin have been recommended. Perhaps, when the inflammatory tendency is gone, this is a good form :

No. 180. Sulphate of quinine.....	10 grs.
Dilute sulphuric acid.....	80 drops.
Syrup of orange-peel.....	1 oz.
Water.....	7 oz.

Take an eighth part, three times a day, of this tonic medicine.

In the chronic form of vaginal leucorrhœa, the discharge is more or less colorless or whitish; at times it is of deeper hue, being greenish, yellowish, or brownish, and now and then so acrid as to excoriate the tops and insides of the thighs. There is little if any increase of heat, and little or no pain or tenderness. The glands in the groin are not enlarged. Weakness, languor, and impaired digestion attend; and the womb may at last be prolapsed from relaxation of the passage.

Treatment.—The acute stage we saw required lowering and quieting the system; here tonics and astringents may be given at once.

No. 181. Camphor.....	} of each 20 grs.
Sulphur of quinine.....	
Sulphate of iron.....	
Extract of camomile.....	40 grs.

Peruvian balsam enough to make thirty-six pills, two to be taken two or three times a day.

Decoction of oak-bark, the sulphates of zinc and alum may be used for injections, as before recommended.

In some cases, this discharge is acting as a sort of safety-valve; then it would be dangerous to do more than check it; but it rarely happens that it acts as a safety-valve.

LEUCORRHŒA FROM THE GLANDS AT NECK OF WOMB.

This is characterized by the whiteness of the discharge, by pain at the lowest point of the backbone, and by the state of the womb, when examined by the eye.

The discharge is thick, white, and resembles a mixture of starch and water, without heat, or it looks like thin cream. It is readily whisked from the finger after examination, and is capable of being diffused in water, which it does not render turbid. It is often much thicker than cream, and is very tenacious, and then requires to be squeezed out, by exertions to empty the bowels. By long continuance, this disease may bring on some still more serious ones; and paleness, bloodlessness, costiveness, indigestion, etc., attend the later stages.

The exciting causes are cold, great indulgence, hot, spicy, luxurious food, local excitement after marriage, feather-beds, late hours, balls, etc.

Treatment.—Remove the stage of excitement by the usual means—cupping on loins or low down the back, hip baths, gentle, cooling laxatives, as the Seidlitz powder or cream of tartar, and inject tepid water or decoction of poppy-heads three or four times a day.

When the chronic stage comes on, we can try gentle astringents, such as have been already mentioned.

LEUCORRHŒA FROM THE WOMB.

Many have denied that whites can come from the womb; but this discharge has been found in the uterus after death, in a female who had labored under whites during her life.

Like the other forms, there is an acute and a chronic stage.

In the acute, there is pain in lower part of back, with sense of dragging in the hips, thighs, etc.; there are thirst, indigestion, and tendency to hysteric seizures. The discharge is sometimes

copious, then stops; then is again discharged abundantly, giving decided relief. The constitution sympathizes, and all symptoms are aggravated at, or before and after, the menstrual periods. The discharge thickens into what is called pus or matter, in some instances.

The chronic state is very common—languor, weakness in loins, headache, paleness of face, and dark circle under the eyes, and increased discharge on, or before and after, the periods. When the periods seem to have been superseded by this discharge, all the symptoms become more severe, and pallor or sallowness of face, loaded, yellowish, or pale or sodden and flabby tongue, an impaired or fanciful appetite, with eruptions of acne on the face, all show the inroads made upon the constitution.

The discharge varies much in quantity; sometimes it is profuse, mostly colorless and semi-transparent; in others it is opaque, of a greenish, yellowish, or brownish tinge. It varies as to thickness—from a thin, watery mucus, to a gelatinous mucus, resembling the white of a raw egg, or a curdled-like matter. It is often very acrid.

When neglected, the termination of this leucorrhœa may be in stoppage of the periods, sterility, consumption, and even dropsy.

Treatment.—Here again we must be guided by the local heat, pain, and other signs of excitement; wherefore cupping, leeches, hip baths, soothing injections of warm water, with cooling aperients and diet, and every thing to quiet the irritation, are necessary.

But in proportion as debility seems to prevail, we may give tonics, and nutritious, not stimulant nor too high seasoned, diet.

No. 182. Citrate of iron..... 60 grs.

Infusion of calumba, or of quassia.... 12 oz.

Two table-spoonfuls thrice daily.

The iodide of iron, two grains thrice daily, when paleness and scanty periods are present.

Many of the remedies called tonics have been recommended.

The chalybeate mineral waters may be drunk. Tunbridge or Pyrmont waters, or Spa water.

Sponging or douching the loins, hips, and back.

Tepid injections of warm water, to wash away the discharge.

We must use caution in ordering astringents, and they must at first be tried in very small quantities. The acetate of lead or

Goulard water, the sulphate of zinc, etc., one or two grains to each ounce of water. A blister to loins is often useful.

A properly regulated diet is of importance, and the daily habits must also be looked to.

There are some watery discharges from the womb, which will be described further on, under the heads of Cauliflower Excrescence and Hydatid.

MENSTRUATION—THE MONTHLY PERIOD.

This is, perhaps, the most important change which the female constitution has to undergo; and the difference between the girl in whom no menstruation has occurred nor is impending, and that same girl after it has been fully and happily established, is indeed truly striking.

Some mothers are exceedingly foolish in sometimes wishing to force the period; and, having made up their minds that the age of fifteen or sixteen, etc., is the proper time, they ascribe often temporary ailment which may occur to the want of nature's own evacuation.

One melancholy instance is related by Dr. Dewees, to whom a mother brought her daughter. He advised the mother to wait, and do nothing. She went to a quack; medicines were given, fever, etc., were set up; the quack told her to persevere, when death ensued. The celebrated quack medicine was the oil of savin.

The age at which menstruation may occur varies between the ages of twelve and nineteen; but fifteen is the age at which it most frequently happens, and the duration of this function is thirty years generally.

Management of the Menstrual Period.—Increased susceptibility and excitability attend this state. When the female is in good health, and the discharge is regular and natural in every respect, all that is required is the avoidance of any, or of all, those influences which may prejudicially disturb the mind or body.

All medicines or remedies should not be used at this time; no bathing, cold or warm, should be allowed if all is natural.

Exposure to wet or cold is very dangerous; and if the person is in the habit of using vaginal injections, she should not use them during and shortly before the period. Excessive exertion and riding on horseback must be interdicted.

Sexual intercourse must be totally forbidden; for, when such a circumstance has happened, "it has been followed by profuse hemorrhage; at other times by a suppression of the discharge; to which have succeeded fever, delirium, hysteria, mania, and even catalepsy."

Confinement in crowded, ill-ventilated rooms, deprivation of air and exercise, bad diet, etc., may cause disorders of menstruation; but a natural discharge in a healthy female requires nothing to be done by medicines. There may be some cases where the constitution seems, after a few periods, to require a little help in the shape of tonics, and a more generous diet.

The period of the final cessation of the menses is variable.

At no time during her life is a female under such fear and anxiety as at this, which generally takes place about the age of forty-five or forty-six. Yet it is not reasonable to think that any disease should be a necessary consequence of the cessation of a discharge which is as perfectly natural as its appearance or continuance.

By many it is considered that the turn of life is the fatal period when serious and fatal disease is set up; so that when, as sometimes happens, the quantity of the periodical secretion is diminishing, prior to a total cessation, women are exceedingly uneasy, and often apply to have the secretion forced, as they call it. In this way disease might be induced which would never have occurred.

It is supposed that cancer chooses this time for assault. Yet statistics do not confirm the supposition.

Mons. Lisfranc, of Paris, tells us, with regard to this point, that "we are not to believe, with most writers on this subject, that affections of the uterus are more common at this period than at any other. The great law of physiology, that the more an organ is exercised the more liable it is to morbid affections, here holds good, as elsewhere. From thirty to thirty-five years of age the reproductive organs are most exercised, and observation shows that diseases of the genital organs are more common between those two periods. There are a great number of women, affected with diseases of the uterus, in the Hospital of La Pitié; and among those so attacked, I do not remark more than three who have reached the age of forty."

The truth is, that when disease has been formed, or there is a

tendency to some morbid action in the system, the cessation of the periods generally aids in aggravating the one, and in developing the other; and thus a disorder, too slight to attract attention during active menstruation, will assume an active and a rapid form when it ceases.

Treatment.—This period of cessation is marked either by a diminished quantity of the menstrual secretion, or by an excess of it.

Now, the diminished quantity is the way Nature selects, and accordingly many females have less and less discharge at every period, when cessation is about to occur, until it ceases altogether; and this goes on so gradually as often to escape notice, for no unpleasant feelings or diseased manifestations occur.

In such cases, there is no occasion for medicines; but when there is an excess, we must diminish the quantity of the discharge, and try to prevent a return of excess.

Rest, cool drinks, application of cold, and gentle aperients. If these fail, together with the horizontal position, we must resort to the powerful anti-hemorrhagics, such as the acetate of lead and opium, as recommended in spitting of blood.

To apply cold to the belly, we should procure some large bladders, half fill them with ice, cold water, or water in which there is some ice; that is, if this happens during summer or hot weather; if in winter, cold water alone will suffice; and keep these bladders applied.

The legs and feet are to be kept warm, in order to draw or divert as much blood as possible from the inward part.

The lead and opium pills or draughts may be given every three or four hours, according to circumstances; that is, if the quantity of the blood discharged is very great, and is causing faintness, etc.; but if the symptoms are not so urgent, then the sulphuric acid and alum medicine, as recommended in HÆMOPTYSIS, should be given.

The plug is often applied in extreme cases; to make it, we fold a soft handkerchief, dip it in vinegar and water, and put it up to the top of the bleeding passage, as far as it can be gently pushed. Some recommend a piece of ice to be inserted within the handkerchief.

This plug may remain undisturbed for eight or ten hours; but not longer. Every eight or ten hours it should be removed, cleansed, and reinserted, or another put in instead.

To prevent a recurrence of this monthly flooding, we must teach the avoidance of whatever tends to excite mind or body, and sometimes a few ounces of blood must be extracted by lancet, or by cupping-glasses to the loins, just before the period, if the person is of full plethoric habit, and has been once already attacked.

Perhaps no remedy is so derivative, nor so useful in preventing these attacks, as purgatives—such as an acidulous solution of Epsom salts.

No. 183. Epsom salts.....	1 oz.
Sulphuric acid, diluted.....	80 drops.
Tincture of cardamoms.....	3 drachms.
Infusion of roses.....	8 oz.

An eighth part, once or twice a day, according to effects.

In some cases, the patient has been obliged to be confined to a milk and vegetable diet.

In some cases of cessation, the discharge continues for an unduly long period, and yet with little discharge. Here we may give the bitter infusions, or the quinine. If necessary, a pill of acetate of lead and opium may be given occasionally, or for two nights successively. Directions how to manage these pills are given in the article HÆMOPTYSIS.

Finally, many women do not suffer heavily at this time; yet they complain of flying pains, which resemble those of rheumatism; also of headaches and hot flushes, etc. In such cases, one gentleman recommends, as sovereign remedies, sarsaparilla and rhubarb, with alterative pills, viz.: one Plummer's pill every night, for some eight or ten nights, then to discontinue for a week or two, and repeat.

GREEN SICKNESS, OR CHLOROSIS, OR AMENORRHÆA.

The blood is here altered in quality, containing less of the red particles and of its solid ingredients than it should do, while the secretions are also depraved. In some cases it depends on a want of development in the ovaria. These symptoms are languor or fatigue on slight exertion; palpitations, pains in various parts, especially the side, loins, and hips; throbbing of arteries; signs of indigestion, such as flatulence, acidity; a depraved appetite exists, and lime, chalk, pickles, acids, etc., are eaten when there is no desire for proper food. The lips, face, and skin lose their

color, and assume a dusky, sallow hue ; a black or dark circle surrounds the eyes ; the feet swell and pit on pressure ; the breathing is hurried, the pulse is frequent and small in caliber, the mind depressed ; the finger-nails dry, split, break off ; hair falls off ; hysteria in its various forms, with cough, dropsy, and, in some cases, hectic fever sets in.

The pains in head or side, cough, etc., are so violent and fixed as to frighten, and give the idea of inflammation being set up in those parts.

Treatment.—We must try to restore the blood to a healthy state, and we must correct all the secretions that are out of order.

Some stomachs will not bear the stronger tonics at first ; they seem to give pain. Then I begin with infusion of calumba or gentian, with sal volatile, twenty to thirty drops, and some carbonate of soda, twenty grains. To this one drachm of Epsom salts may be added, when costiveness is present. The Epsom salts are omitted as soon as they have acted gently. Then a mixture of infusion of calumba, with three grains of citrate of iron, may be given. After this, other preparations of iron will be well borne.

But, in all cases, an occasional dose of an alterative aperient is necessary, about once a week. A pill, consisting of three grains of blue pill, and two of compound extract of colocynth, should be taken at bedtime, and next morning a dose of the black draught (salts and senna mixture), or a seidlitz powder, will answer in those who are not of too costive a habit. These aperients seem to set the bile flowing freely, and to clear the stomach and bowels, improving the digestive powers, and causing more healthy blood to be formed.

Some prescribe aperients combined with tonics, such as aloes with the sulphates of iron and of quinine ; but I prefer to give them as above stated.

The iodide of iron, two grains, with tincture of orange-peel, one drachm, and one or two ounces of water, three times a day, often acts powerfully.

Hip baths—the waters of Driburg, Pyrmont, Spa, Carlsbad, or the Bath and Buxton warm springs, used as baths.

Diligent hand-rubbing, with gloves made for the purpose—proper air and exercise.

Troublesome symptoms are to be obviated, as best we may ; but of all, the pain in the side is the most general.

As it depends on the state of the womb in this case, it is not likely to be relieved in any other way than by the relief of the original disorder. Still, poultices may be applied, over which powdered opium has been sprinkled; or an instantaneous blister may be formed by nitric acid, as described in article on CHOLERA, and dressed with an ointment of morphine; or the belladonna plaster may be applied, or the belladonna liniment rubbed in night and morning, or when in pain.

The hysterical symptoms are also troublesome. For these, the compound spirits of ammonia, thirty drops in camphor julep, with a little tincture of ginger or of cardamoms, may be generally serviceable.

Here the volatile tincture of guaiacum may be useful—thirty to sixty drops in milk, or milk and water, three times a day. Madder has been recommended; but it is seldom, if ever, efficacious.

Where the green sickness depends on the non-development of the ovaria, we shall detect this state of cause by seeing that the usual signs of womanhood, of female development, have not made their appearance; that the breasts do not become larger, nor the hips and thighs, and limbs acquire that full development and rounded form which characterize the healthy female.

Here art is at fault; for there is not sufficient light to guide our practice.

As to giving savin, hellebore, ergot of rye, strychnine, rue, pennyroyal, and various other nostrums, which have been called specifics, I have no faith in them. Such as rue, and others like it, there can be no harm in trying; but savin, hellebore, etc., may, and often do, act like poisons.

It is better to trust to perseverance in strengthening the constitution by every possible means, than to seek for those remedies so highly thought of by many an old gossip, and miscalled specifics.

RETENTION OR SUPPRESSION OF THE PERIODS—AMENORRHEA.

Here the periods may have commenced; but, from accidental cold, or some other cause, the discharge suddenly ceases; and although the feet may be put into a warm bath, and other measures may be taken, yet it does not reappear; this is suppression.

Or the time may have arrived for the usual secretion to appear, and it does not appear; this is retention.

This state of things may coëxist with, or spring from, constitutional debility.

The symptoms are those of debility and languid circulation, or of debility, with a deranged state of the blood added.

The symptoms are, pale countenance, or else it is waxen, sallow, and muddy, the general signs of debility, of impaired digestion, and of nervous or hysterical seizures.

Treatment is pretty manifest to those who have attended to the preceding directions.

Hip baths, steel medicines, Griffith's mixture, or the compound iron mixture of the pharmacopœia, occasional aperients or purgatives. It is often a successful practice to apply a few leeches to the perinæum, about four days before the period is expected; and this time may be known by hardness of the breasts, and by certain inward feelings of discomfort.

The complications of amenorrhœa are very numerous, and must be treated as they arise.

PROFUSE MENSTRUATION—MENORRHAGIA.

The quantity lost at each period is, on an average, about five or eight ounces; and this secretion proceeds from the lining membrane of the womb itself, and seems to consist of the elements of the blood, in an altered condition. It contains much red coloring matter; but the albuminous and fibrinous constituents are present, probably in smaller proportion than in healthy blood. The coagulating power is wanting usually, when the secretion is not mixed with blood; but if any clots appear, we may conclude that blood is also escaping from or near the secreting surface. A very small portion of surface is sufficient for this secretion; for the womb of a young woman was examined after death, who had menstruated regularly and properly to the time of her death, yet the womb retained only a surface healthy enough to perform the menstrual function of the size of a finger-nail, all the rest of the interior of the womb being in a state of disease.

The coagulation of the fibrine, normally present in the menstrual fluid, would seem to be prevented by its mixing with the vaginal mucus; but when an increased amount is poured forth, this admix-

ture is not sufficient to destroy its power of forming a clot. In some cases of difficult menstruation, which seem to depend on a state of low inflammation in the womb, the fibrine has such a tendency to become organized, as to form shreds or layers of false membrane, which sometimes plug up the mouth of the womb.

The menstrual secretion in health is remarkable for its very acid character.

A monthly discharge of less than four ounces may be considered as scanty; of more than ten ounces, as excessive; and this discharge may take place in gushes, or in the form of a slight, moderate drain.

But, whatever the quantity discharged, the great and only point to be attended to is the effect upon the constitution. However excessive the quantity discharged may seem to be, it is doing no harm, and requires no meddling with, if the female is left in good health, and not in a state of debility and exhaustion.

This disorder may be viewed under three heads: that in which the discharge is of natural character, but is excessive in quantity, or as respects its continuance or frequency of recurrence; 2d, that in which there are clots of blood intermixed with the discharge, but without any change in the position or size of the neck of the womb; 3d, that in which there is a change in size or position of the womb.

Dr. Copland divides the disorder more correctly into true menorrhagia, and into hemorrhagic menorrhagia.

The first kind comes on in various ways, sometimes suddenly and abundantly, sometimes slowly, yet insidiously. Thus, the period may be quickly over, and yet so much secretion discharged as to produce considerable exhaustion; or it may continue for two or (I have known instances) for three weeks, so that the sufferer was hardly ever free from this secretion for longer than one week at a time.

Whites often precede or follow this disease. On examining the passage, there are neither heat, tenderness, nor swelling.

The accompanying symptoms are weakness, aching across the loins and hips, languor, exhaustion, singing in the ears, giddiness, headache, throbbings at the temples, and palpitations. The countenance, lips, tongue, and gums are all pale. The stomach and bowels become deranged; pains in the side, and the hardly ever-failing attendant on womb irritation, the pain in the left side, are

present; and as the cause continues to operate, the ankles swell, dropsy, looseness of the bowels, convulsions, and various nervous affections make their appearance.

The second kind is menorrhagia, with discharge of pure blood or coagula. "This variety is met with," says Dr. Copland, "in married females chiefly, of a phlegmatic temperament, and in those who have been weakened by disease, or by frequent child-bearing, or by prolonged suckling; and in these circumstances it is generally complicated with whites."

Active or inflammatory menorrhagia occurs in robust, full-blooded married women, who live fully, and indulge freely in every pleasure. The sense of heat, tension, and pain in the region of the womb is great, and the pains are so violent as to resemble labor pains.

The discharge sometimes comes on in gushes with clots, and then the person feels relief for a time; in others, a draining, more or less copious, goes on. The neck and mouth of the womb are hot and swollen. After the discharge has ceased, the patient is left weak, and, after many attacks, with her health impaired.

The passive or chronic form may succeed the acute, or come slowly and gradually on. It occurs chiefly among the delicate, the hysterical, and debilitated females; and the increase of the discharge may vary from a slight quantity to that producing the most severe prostration. The clots may be added gradually to the natural secretion, but they increase until they become numerous. Fainting and exhaustion ensue; the back is weak and aching; face and lips pallid; pulse small, feeble, and quick; and most serious symptoms result if the discharge be not arrested.

Treatment of the first variety.—When the patient is robust or full-blooded, a free discharge is often salutary, and must on no account be meddled with. General and local blood-letting, cupping on the loins, may be ordered when there is high action; but unless there be the most unequivocal evidence of tolerably high excitement, it will be better not to meddle; but when this discharge occurs in the delicate, pallid, and hysterical, the recumbent position, spare diet, cooling regimen, and cooling astringents are demanded.

The cream of tartar, with infusion of senna, to open the bowels; then infusion of roses, with sulphuric acid, may be given.

The main dependence is to be placed on the sugar of lead

draughts, combined with opium (see SPITTING OF BLOOD), or on the sulphate of zinc, with opium.

The ergot of rye has been recommended, in doses of five grains, three times a day.

Cold-sponging the loins, abdomen, and hips, and cold injections may be employed.

Plugging the passage is not recommended here.

For the pallid and delicate, the citrate of quinine and iron, or this mixture :

No. 184. Sulphate of quinine.....	16 grs.
“ “ iron.....	15 grs.
Dilute sulphuric acid.....	$\frac{1}{2}$ oz.
Syrup.....	4 oz.
Water distilled.....	$3\frac{1}{2}$ oz.
Mix.	

Give one table-spoonful thrice daily.

Chalybeate mineral waters, salt-water bathing, and cold shower bath are of great service. Avoid all causes, such as prolonged or excessive suckling, or cold. Light nutritious diet, and wine.

The hemorrhagic form must be treated during the inflammatory stage, with depletions of blood, cooling aperients, preparations of antimony with opiates, acetate of lead with opiates, and ipecacuanha and opium, when there is much pain or spasm. For pain, opiates at night, either in the form of Dover's powder, five to ten grains, or in the shape of what is called the compound soap pill, of which five grains every night may be taken.

During the intervals a cooling regimen, spare diet, cooling aperients, local depletions, may help to prevent a recurrence of the congestion.

In the passive state of this hemorrhagic form, or clotted profuse menstruation, as it may be called, we must apply the cold douche bath on the loins and hips, cold astringent injections, the recumbent posture, and perfect quietude.

It has been recommended to throw up a few drops of a solution of alum or of acetate of lead into the womb itself, by means of a male gum elastic catheter, which should be introduced gently ; the wire withdrawn, and a small syringe being adapted to the catheter, a few drops (say thirty or forty) of a weak solution of acetate of lead may be thrown in ; and the moment pain ensues in the back, the operator should desist.

This operation must not be attempted by any one but a surgeon. The medicines to be given are the sulphuric acid with alum mixture (see HÆMOPTYSIS), the acetate of lead, and opium pills; and where the disease seems to depend on a diseased condition of the blood, the cream of tartar is described, by Dr. Sylvester, as endowed with extraordinary power over these discharges.

PAINFUL OR DIFFICULT MENSTRUATION, OR DYSMENORRŒA.

This is a very painful disorder. It has been defined as menstruation, preceded and accompanied by acute pain in the belly, at its lower part, and often in the back or breasts, the discharge being frequently scanty, or presenting morbid appearances.

The suffering is often extreme, and pregnancy is often prevented by this state, or it may occasion abortion, if pregnancy has occurred. Married and single females are subject to it, the latter especially, and it may occur in all temperaments and habits of body. Most frequently we meet with it in woman of irritable, hysterical, and nervous temperaments; of spare, strumous, and consumptive constitutions. Its occurrence is favored by indolence, and by full or rich living. Exposure to cold, mental emotions may cause it.

The amount and character of the pain may vary much—from a bearable amount of pain to such agony as to occasion fainting or severe retchings; and it may accompany every period from the commencement of menstruation in life to the last period.

This form of menstruation may be called neuralgic, and attacks chiefly unmarried females, or the married who have not borne children. It may appear at any menstrual age, but it is said to be most common about the thirtieth year. It is generally observed in nervous or hysterical and irritable temperaments, and in spare and delicate habits of body.

The monthly paroxysms of pain have all the characteristics of neuralgia, as in tic-douloureux. They are often accompanied by headache, and the local pain begins at the lowest part of the back, spreading round the belly and to the thighs. There is a sensation of bearing down, and the agony is at times so great that the sufferer writhes about and tries various means of bearing the pain better.

After a certain time, some hours, or a day or two, a discharge commences, which at first is scanty, or comes in slight gushes;

but the quantity is rarely great, though it varies in different individuals. It is frequently natural in appearance, at times pale, or mixed with small clots, or with shreds, or with a brain-like matter.

The membranous shreds, which are passed, consist of plastic lymph, formed within the womb. They may be thrown out in one piece, and shaped even like a triangular bag, as if it had been molded upon the interior of the womb, and its expulsion is attended with violent forcing pains, not unlike those of labor. This discharge of membrane may accompany every period successively, or only occasionally. There is another form of this painful affection, which is attended with inflammatory symptoms, viz.: flushes, succeeded by chills, headache, and feverishness; some time before the discharge, the skin is hot and pulse frequent, with constipation. These subside as the discharge proceeds; but the pains are violently bearing down, when clots or coagula, with portions of membrane, are expelled. A white discharge remains after the colored one, further weakening the sufferer.

Between the attacks, the health may remain pretty good, although whites may remain constantly.

Females who thus suffer are said never to conceive; this is not true in every instance.

Some have mistaken the membranes expelled for portions of those membranes which are formed during conception, but the former are of a dirty white or yellowish color, after moving them freely about in water; neither do they possess the soft, pulpy appearance and reddish color of the conception membrane; nor have they any of the little bags which distinguish this latter; neither are there any of the little holes for the entrance of blood-vessels which are found in the pregnancy membrane. The latter is also a double membrane.

This disorder may not materially disturb the general health, however severe or painful it may have been; and it is often cured by medical treatment, by marriage, and by child-bearing, while it ceases at a certain period of life. Still, its cessation may be followed by certain organic diseases.

Treatment.—To relieve the suffering when present, and to prevent it during the intervals, are the objects we must aim at, and it is very difficult to attain the first. Still, we may give relief in almost all cases.

If the patient is strong and full-blooded, leeches must be ap-

plied, though many women do not like the idea of leeching, lest the discharge should, as they say, be driven away altogether; but there will be no danger of this, if a few leeches be applied to the upper part of the thighs. They may give relief by lessening the inflammatory tendency that prevails.

Fomentations with hot sponges, the warm bath, the warm hip bath, injections in the forepassage of warm decoction of poppies, and hot fomentations over the front and lower part of the body; and after them, a belladonna plaster.

An opiate suppository or lavement (see GLOSSARY) is most efficacious; or else tincture of opium in a draught; but if opium can not be borne, from peculiarity of constitution, give two of the following pills every third or fourth hour:

No. 185. Compound galbanum pill.....	30 grs.
Extract of henbane.....	20 grs.
Biborate of soda.....	30 grs.
Extract of belladonna.....	4 grs.

Mix well, so that the last ingredient be equally divided, and make twenty pills.

The secretions should be attended to, by mild aperients occasionally; warm or cold salt water baths, and whatever is useful in conducing to healthy vigor.

The iodide of iron, the wine of iron with compound spirits of sulphuric ether, the ammoniated tincture of guaiacum, the tincture of cantharides have all been recommended more or less strongly.

But I have found the greatest advantage from giving the following drops, about six or seven nights before the expected time, having previously taken care to correct whatever seemed to need correcting; to remove indigestion, if that were present, or costiveness, the latter not by sharp purgatives, but by gentle aperients.

Drops against Painful Periods.

No. 186. Wine of colchicum seeds.....	$\frac{1}{2}$ oz
Tincture of opium.....	$\frac{1}{1}$ oz.

Of this, thirty, forty, or fifty drops have been taken every night at bedtime, for six or seven nights before each period, in some water. A hip bath, also, for a like number of nights.

These drops are serviceable also during the attacks, in doses of thirty drops, three or four times a day, with compound sulphuric ether, thirty drops, and an ounce of water.

Some who have once tried these drops, would never afterward be without them. The opium might tend to confine the bowels; then an occasional aperient becomes necessary.

POLYPUS OF THE WOMB.

The term uterine polypus is employed to designate a class of tumors which grow from the inner surface of the womb, or from its neck or mouth, and which are attached to these parts by means of a neck of less size and diameter than the tumor itself.

Womb-polypi are of a pear-like form, of a tapering, elongated shape in some instances, and round, or nearly so, in others. In size, they may be as small as a pea, or as large as a child's head; their surface is generally smooth, the color variable, from that of paleness and straw color, to a color more or less bluish or purple; they are vascular. We have said they are attached by one pedicle or neck, but two or even three attachments have been met with. Probably there is but one pedicle, and the other attachments occur from inflammatory action having been in some way excited, and adhesion forming at one or more points.

A polypus is entirely inclosed within the womb at first; but as it becomes larger, it dilates gradually the neck and mouth of the womb, passes through them, and protrudes into the passage called the vagina.

The local symptoms attending these polypi are such as would arise from the presence and irritation of any foreign body in the passage. The mucous secretion of the part is increased, and becomes purulent as well as mucous, after a time; and the patient deems, perhaps, herself to be affected with whites only.

But the discharge may have some blood intermixed, or it may become discolored and fetid—so much so that many persons have been almost reduced to despair, because they thought “a cancer was forming,” until an examination had been made.

There is a feeling of weight and uneasiness in the part, with a frequent desire to make water; or there is a bearing down in the back bowel.

If the discharge is profuse, there are signs of debility or of exhaustion; and severe indigestion, with vomiting, palpitation, and dropsy of ankles are present.

The quantity of the discharge is not in proportion to the size of

the polypus, since a small one, situated in the neck of the womb, may cause as much as the largest of polypi.

Fortunately, when these polypi are once removed, there is no tendency to a reproduction; neither is there any danger in removing them, if the case is properly selected.

The bad effects they produce arise from the exhaustion of the discharge, and from the pressure which they, when very large, may exert on neighboring parts.

Treatment.—While the polypus remains out of the surgeon's reach, we may do much good by throwing up injections, and by treating as we treat cases of whites or of profuse menstruation, so as to prevent the exhaustion which so often arises from the discharge.

The tumor, which must be removed, may be taken away in three ways: If it is small, or of a cellular character, by forcibly twisting it off. Secondly, it may sometimes be drawn downward, and the pedicle divided by knife or scissors. And lastly, a ligature may be applied to it, so to constrict the pedicle as to cause it to fall off in time.

The best mode is that of applying a ligature; and the reasons why this mode of removing the polypus is preferable to either of the other two, it needs not that I should relate; but this operation should generally be performed only when the pedicle is smaller than the body of the swelling, and its surface smooth, for a rough surface accompanies malignant disease.

I was consulted, some years ago, by an infirmity patient whose emaciation, debility, and deep saffron-colored skin had been attracting great sympathy and attention. She was supposed to be dying from cancer of the womb.

On examination I found an uterine polypus, so large as to nearly fill the vagina, with a neck of a diameter almost equal to that of the body of the polypus; while the nearest point, the head, felt rough to the finger.

Notwithstanding these suspicious circumstances, extirpation by ligature was recommended.

The surgeon of a neighboring town, who had attended her all along, absolutely refused to operate, and persuaded the woman to refuse. He said it was a case of cauliflower excrescence; that it was of malignant growth.

After some discussion, it was agreed that the woman should seek

the advice of an eminent accoucher. She did so, and brought a letter to me to the effect that he would operate if the case were under his care. The ligature was applied; the polypus was brought or came away in eighteen or twenty-one days. The fetid, horrible-looking, discolored discharges were stopped, and the dying woman soon recovered all her original good health and bloom.

On examining the polypus, its surface was found to be smooth; only some large vessels ran over the surface, which were dilated by the compression of the sides of the vagina, in consequence of the size of the polypus; and the pedicle was thickened and swollen, probably from a similar cause.

CAULIFLOWER EXCRESCENCE OF THE WOMB.

An excrescence like a fungus sometimes grows from one lip, or from the whole circumference of the mouth of the womb, insensible, like the ordinary polypus we have just described, but having a broad base and an irregular surface, which has a tendency to bleed at times, and also to recur if it be removed.

Symptoms.—Little or no pain; an abundant secretion and discharge of fluid, and this discharge constitutes the distinguishing symptom. It is of a watery character, not of any smell, and often mixed up with the ordinary discharge of the whites, and also with more or less of blood.

If the tumor be examined by a speculum, its color is a bright-red or flesh-color; and its size may vary from that of a hazel-nut to that which fills the vagina. When it begins to attract attention, it is often not bigger than a strawberry.

The drain from the swelling goes on; and, as there is no smell, the patient's attention is not attracted to it until the constitution becomes quite exhausted.

The stages of this exhaustion are marked in the usual manner—by languor, weakness, indigestion, etc., down to dropsical ankles and extreme exhaustion.

Treatment.—We must check or prevent, if we can, the discharge, by the usual astringent injections, by a mild, unstimulating diet, recumbent position, avoidance of all local stimulus, and gentle laxatives occasionally. The cold hip bath or douche to the loins; and gentle bitter infusions, as of gentian or calumba with sal volatile, and some carbonate of soda—two ounces of infusion, twenty

drops of sal volatile, and twenty grains of soda, two or three times a day.

This tumor has been removed by ligature, but it has generally recurred; and the only operation which promises any chance of success is excision, or cutting away of the swelling itself, and also of the neck of the womb. This has been done with success, and no recurrence of the malady. When the disease does recur, an operation has prolonged life, by taking away, for a time, the source of the exhausting discharge.

THE CORRODING ULCER OF THE WOMB.

This is a variety of ulceration differing from cancer in not being attended with deposit of diseased structure around the affected part.

There are no symptoms to be depended on, and the disease is only made out by a medical man's examination under whose care the patient should place herself.

COLORLESS, OR TRANSPARENT, OR WATERY DISCHARGES FROM THE WOMB.

The known sources of the watery discharge from the womb are two—the cauliflower excrescence, and hydatids situated within the cavity.

Hydatids are unattached vesicles, possessing their proper vitality, and are dependent upon the parent body for the situations and conditions of existence.

Hydatids have the appearance of soap-bubbles, with a limpid fluid in them instead of air, the envelope looking like a film of coagulated white of egg. They vary in size from that of a millet-seed to that of the largest orange; they are of a globular or spheroidal form, and their specific gravity is nearly that of water, though they generally sink when plunged into this fluid. They are transparent and clear, though their envelopes may give them an opaline hue, in spots, or all over their surface.

Within these hydatids globules may be seen floating about unattached, in the interior of which other globules appear, successive generations thus appearing in the same cyst.

They adhere to the neighboring parts, often causing inconvenience by their pressure and presence; they decay after a certain time, and the skins or empty bags are squeezed together.

Hydatids are divided into the solitary and the prolific. The first is most common in animals; the last, in man; and these latter contain always numerous others within their cysts—from a hundred to a thousand may be contained in the same cyst.

These parasites form without exciting any disturbance, and their existence has never been suspected until they were found after death.

Treatment.—There can be no treatment where there are no symptoms; but in the present case of hydatids in the womb, there may be a colorless discharge, like water indeed; and the patient must then try to have it ascertained whether this watery discharge proceeds from a cauliflower excrescence or from hydatids. The only unerring sign of the latter is the cyst itself, swimming or floating in water when recently discharged.

The remedies are whatever will tend to restore or augment the vigor and health of the patient—tonics, vegetable or mineral baths, good food, etc.; for it is a received rule that parasites form, multiply, and increase in proportion as the patient becomes weakened, and as the excretions or secretions accumulate or are retained.

SPINAL CURVATURE.

This is perhaps one of the most frequent affections we meet with.

Spinal deformity may be produced in various ways; there may be disease of the bodies of the bones of the back, and of other adjacent parts, from scrofula. With such forms we do not here meddle, but we allude to what is called lateral curvature.

At first there would seem to be nothing but muscular weakness; and the first sign of the future deformity, if neglected, is a rising of one shoulder higher than the other, and a greater fullness. On examining the spine, we shall find a curve to right or left in those spinal bones which are between the shoulder-blades. This state may last for some time; but the same causes continuing to operate, another curve takes place lower down in the loins, forming a figure like the letter S; and this is called the double curvature.

The upper lateral curvature has generally its convexity to the left, and comprises the lower neck spine-bones and two or three of the upper back ones.

The middle curvature generally has its convexity to the right, and it is formed by the spinal bones of the back.

The lower curvature has its convexity to the left, and comprises the lumbar and lowest spinal bones of the back.

The consequences of lateral curvature are usually very slight; but when the curvature is extreme, it often gives rise to very serious symptoms—severe pains, cramps, and numbness—in consequence of pressure being exercised on the nerves, which issue from the spinal marrow; and the deformity may increase to such a degree as to impede the due action of the heart, lungs, stomach, etc.

This disorder attacks from the age of eight to eighteen. A predisposing cause is the female sex; a rickety, scrofulous constitution also disposes, and so does impure air and whatever is calculated to induce debility. Very slight exciting causes will bring on this affection. The attitude necessary to carry a child in arms is a prolific source; and we too often see a little bit of a girl, not long able to walk alone, carrying a baby on her arms. Standing on one leg, and a certain position when learning writing, drawing, etc., are also causes. But of all causes, stays are the monster cause, and annually send many to their graves, who, but for them, might have lived many years, in enjoyment of a happy life. "These abominations are made so as to press downward and together the lower ribs; to reduce the cavity of the chest, especially at its base; and even partially to displace these vital organs. They leave the upper regions of the chest exposed; those very regions where tubercular, consumptive, bronchial, and inflammatory diseases generally commence, and which are the most prone to attack, from the vicissitudes of the season, weather, temperature, humidity, and external injury. These noxious and unnecessary articles of clothing, these mischievous appliances to the female form, useful only to conceal defects, are rendered still more injurious by the number of unyielding or only partially yielding supports with which they are constructed on every side. There are the whalebones in the back and sides, and the steel in front, extending nearly from the top of the sternum (breast-bone) almost to the pubes (lowest part of front of body)." The author goes on to remark on the effects caused by the pressure on the vital and assimilative organs, and then adverts to this metal support. "However well it may be protected from contact with the surface, it acts as a conductor, both of animal warmth and of the electro-motive agency passing through the frame; it carries off, by its polarization, into the surrounding air, especially during humid states of the atmosphere, the electricity

of the body, this agent being necessary to the due discharge of the nervous functions, either in its electro-galvanic state or manifestation."

Now, without attaching too much importance to the electro-galvanic objection (for some young ladies do not wear metallic fronts), there is no doubt that the tight stays do compress and prevent the due action of muscles, whereby they lose their powers, and ultimately dwindle away. I knew of a case of a Mademoiselle Leblanc, a young French milliner, remarkable for the petitesse of her taille, who died an early victim of consumption; and it was found that those portions of the muscles of the loins and fore-stomach, which had been subjected to the highly-strained pressure of the corset during life, were reduced to the consistence of a soft and flaccid cellular tissue, faintly sheeted with muscular fibers.

If the spinal deformity be suffered to continue unchecked, the lungs do not expand sufficiently; difficulty of breathing, debility of the stomach functions, heart disease, and dropsy of the chest may ensue in the end, from the continued pressure—a pressure which is sometimes never intermitted; for some of the victims can hardly sleep but with their stays on them.

Treatment.—Attention should be immediately paid to the slightest derangement in the symmetry of the spine and shoulders; for the early treatment is uniformly successful.

All habits must be investigated; the mind must be less attended to, the body more; and instead of inciting a perhaps clever daughter to too much study, the hours of schooling should be shortened. Exercise in pure air, and plenty of it, yet so as never to fatigue, must be enjoined. If appetite be deficient, gentle tonics must be given; neither should the parents or teachers insist too much on the Cooper chair and the sit-upright system; for, since some can bear the erect position longer than others, those who feel fatigue from sitting or standing too long in the perpendicular, should be suffered to rest the fatigued muscles by a recumbent position for a time. All the talk about marvelous couches should be rejected as unworthy of credit, and the main point as to beds or couches is, that they should not be heating to the back, as a feather-bed for instance.

As to the Cooper chair, I think that no contrivance could have been invented better adapted to increase the deformity. It is astonishing how soon, in so inconvenient a seat as that forms, the

girl slides into a position by which the muscles relieve themselves, while some are acting, and others, which should act at the same time, remain quiescent. There is no trustworthy evidence that Sir Astley Cooper ever recommended or invented that chair, and the fiction may be classed with that of the Abernethy biscuit.

But possibly the disorder has made some progress, and effective treatment must be attempted. Here a fertile field has been opened to quacks and speciality doctors.

Many years ago, I recollect the system recommended by Drs. Bell and Shaw; and some sufferers used to be told that they were to keep the recumbent position night and day, for one, two years, or even longer, and they would at the end rise up straight.

And so they did, but the muscles so long inactive, could no longer maintain the erect position, and soon the old deformity made its appearance. But, in addition, it was found that, in many instances, where there was a predisposition, consumption was also set up.

Whatever is done remedially must be done while the girl continues her usual daily avocations, and this has been effected by only one gentleman, Mr. Joseph Amesbury. His practice is, to order daily practice on an inclined plane, made in such a way as to allow of the general action of the muscles affected, while for the deformity itself he has invented what he calls a spinal support, which is so arranged as to gently press back the protruding parts, and to allow for the filling up of the corresponding hollow. And after curative treatment was ended, he recommended stays, called simple supports, to prevent a recurrence of the deformity.

The patients continue to walk about as usual, and the general health not only does not suffer, but is much improved.

This is the only mode of treatment, combined with general attention to the health, which I can recommend; and of the advantages of this I have been an eye-witness. Where the disorder has not gone so far as to allow of the spinal bones being immovably fixed in their unnatural positions, I have seen great deformity from the double curvature repeatedly remedied, and health restored.

As to deformity from disease of the bones, caused by scrofulous or other morbid action, each case must be treated as recommended in SCROFULA.

SPINAL IRRITATION.

The general description of this is pain in some part of the spinal column, generally accompanied by neuralgic or hysterical affections, unattended by fever, or by other indications of inflammation, injury, or structural change of the spinal column, or of its contents.

These words of Dr. Copland very correctly and graphically describe spinal irritation :

“A diversity of symptoms attend this state, varying in a considerable degree, according to the part of the spine affected. When the pain or tenderness is felt in the dorsal or back portion, it is sometimes referred to one side of the column, generally to the left side, and is often felt beneath the left mamma or breast; more rarely it is felt on the right side. In these cases, there are hysterical symptoms, with a feeling of tightness in the chest, or of suffocation even, with difficulty of breathing, being obliged to sit up erect always, with palpitations or spasmodic cough.

“When the lumbar spine or loin part is affected, there will be pains and tightness in the abdomen or belly; numbness, cramps, pains, great tenderness, and, in some cases, even palsy of the lower limbs are added; constipation, retention of the urine, or else irritability lower down in the abdomen, with frequent desire to make water, or bearing down, as if of the womb, and the periods disturbed or very painful, will attend irritability of this portion of the spine.

“Irritation in the neck portion is not so often met with as the two former states. Here the pain may rise and extend to the back of the head. There will be pains in face or neck, noise in the ears or deafness; difficulty of swallowing; a choking feeling; loss of voice and speech; an attack like croup; sense of suffocation; an approach to debility or palsy of the arms, with pricking sensations in the hands; and coldness or numbness of one or both hands.”

With these symptoms, we shall find, on examining each bone in the spine—by tapping some particular one with the knuckles, and sometimes by putting a sponge wrung out of warm water—that pain or tenderness is felt there and nowhere else along the spine. Percussion seldom fails to elicit the pain.

Spinal irritation may be of a gouty, a rheumatic, or a syphilitic nature.

Treatment.—If the person be full-blooded, it will be well to lower a little at first, by cupping or leeches.

Dry cupping is often very useful. It is effected easily by throwing a very small bit of paper, touched with ether or with turpentine, and lighted, into a cupping-glass. This acts powerfully; and the glass or tumbler has been half filled with muscle or integument, such was the powerful exhaustion. In this way no blood is taken away, and so we may safely dry-cup where there is debility.

Blisters or irritant embrocations, such as the tartar emetic ointment :

No. 187. Tartar emetic.....	$\frac{1}{4}$ oz.—120 grs.
Lard	1 oz.

Or, if this fail to bring out pustular eruptions, then add sugar, thus :

No. 188. Tartar emetic.....	2 drachms.
White sugar.....	1 drachm.
Lard	9 drachms.
Mix.	

Let the crop of pustules remain for two or three weeks ; if they are too annoying, poultice.

We should correct whatever seems to want correcting in the system. If piles have been suppressed, or the periods, leeches to the perineum, or near the anus.

The urine should be examined, and treated according to its state, if it is out of order. The liver may not be acting properly ; then some blue pill, aperients, etc. ; gentle tonics.

But our reliance must be placed chiefly on cupping, blisters, and irritating embrocations.

HYSTERIC—HYSTERIA.

What is called regular hysteria is distinguished by its marked paroxysmal character ; that is to say, there may not be any symptoms of habitual disorder ; but the patient is liable, under the influence of slight exciting causes—physical or mental, and, at other times, without any decided cause of the kind, or seemingly of any kind—to sudden attacks of a spasmodic nature.

The patient, perhaps, may feel uneasy ; then a feeling of stiffness about the throat arises ; then the patient stares about, and seems queer in her manner ; then a ball is felt rising in the throat,

and this ball is so rarely absent, if ever, that it is called *globus hystericus*, or the hysterical ball; then follow laughter, weeping, and much nervous agitation.

Thus terminates a mild fit of this singular disorder. In more severe seizures, the agitation of mind and body is very great; there are oppression at the chest, difficulty of breathing, palpitation, and speechlessness. The sufferer falls down; the breathing is slow, and the belly is much distended with wind; a quantity of limpid, colorless urine is passed; the patient seems to have lost her senses, and may become violent. The limbs may be either motionless or convulsed, and, in some cases, she rests on the back of her head and her heels. After a time, the convulsive motions become less and less violent; a quantity of wind comes suddenly from the stomach; and soon afterward, with sobbing or laughing, the sufferer comes to herself—sometimes retaining a recollection of what had passed, sometimes not.

The fit may last for several hours, and may pass into a state of coma (unnatural sleep), or into a state of syncope (fainting), peculiar in its character, and sometimes so closely resembling death as to have led to mistakes.

The severe attacks may be over in a quarter of an hour or less, or they may last many hours, or even several days; and they chiefly occur when the periods are suspended, or when the digestion or bowels are deranged; in short, whenever any cause of irritation exists anywhere in the body.

Between the attacks it is not difficult to see who is likely to be exposed to them; the nervous balance is easily excited and easily overthrown.

When the disease has lasted a long time—for years—unchecked, the nervous system becomes seriously affected, and palsy, impaired memory, or even mania, may ensue.

This is what may be called regular hysteria; but the irregular form, where there is no regular fit or paroxysms, who can adequately describe? The states and symptoms are so varying, and so many diseases are simulated in this state, that it requires much watching and practical tact to avoid error.

Irregular hysteria may exist without any paroxysms or fits attacking the patient; the symptoms are very various, and the disorder has justly been called the pathological proteus. Few complaints are more likely to baffle the junior practitioner than this;

it simulates, and sometimes closely too, many disorders of a serious and organic nature. Many sufferers have been bled, cupped, and blistered, not only without relief, but with addition to the original cause of the mischief.

Hysteria affects chiefly young women, in whom the process of menstruation is in some way disordered, whose constitutional powers are feeble, either naturally so, or from exhaustion and debility caused by disease or habits of life. Their complexions are pale; hands and feet obstinately cold; their appetite is much impaired, and, in many cases, vitiated, in which latter case the most singular articles are fancied and eaten; chalky substances are favorites; candles, wafers, sealing-wax, slate-pencil, and various other indigestible matters, are sought after; yet no flesh is lost, no progressive emaciation is to be observed.

It will be interesting to follow Dr. Watson's description of some of the organic disorders which are closely simulated in hysteria. One not uncommon instance is that very serious disease called inflammation of the peritonæum (membrane lining of the bowels). Suddenly there will be acute pain in the belly, increased by the slightest pressure; the skin will perhaps be hot, pulse quick, and tongue furred. Now, if a state of inflammation really existed in this part, the treatment ought to be vigorous—by blood-letting, to great extent, by mercurials and lowering means; therefore, before such exhausting treatment is determined upon, it should be ascertained whether the periods have been wrong in any way, and whether there have been any previous attacks of hysteric fits, or the pain is augmented by increase of pressure; for continued and firm pressure will augment the pain in inflammation; not so in hysteria; or whether it seems seated in the skin, and is excited by the slightest touch. I am in the habit of engaging the attention of the patient by asking questions, etc., while I am pressing, at first, gently on the part. The pressure is then hardly noticed in hysteria; not so in inflammation. If so, do not bleed, but throw up an assafetida injection, and, in a short time, the symptoms of peritonitis will have disappeared.

Dropsy of the belly has been imitated by a flatulent distension of the bowels, to such an extent as to cause the patient, if immersed, to float on water. This flatulence may possibly proceed from a paralytic debility of the bowel muscles, or from a secretion of gas. This gas has been analyzed, and found to consist of

carbonic acid gas, some nitrogen, hydrogen, and carburetted hydrogen. We may satisfy ourselves that there is no dropsy by tapping or percussing the belly with our fingers, when a clear and not a dull sound is returned.

Then we have the very common and intractable pains in the left side, which so many females complain of, and which give great alarm to many minds, because they fancy something serious is gathering there. Beware that the strength is not lowered by leeching, blistering, purging, etc.

There is also an hysterical pain in the head and over the brow; this latter has been called brow-ague, the former *clavus hystericus*, and they were alluded to in the article *HEADACHE*.

Palsy, again, has been simulated, but the palsy comes on very suddenly; the person may be known to be hysterical, or a fit of hysteria will declare what the real state is.

Total loss of voice is another instance, and inflammation of the upper part of the air-pipe and croup are both mimicked. The patient will breathe with the noise peculiar to croup; and in one case, the operation of opening the windpipe by an instrument had been twice performed, the scars of which operations remained visible.

Inability to swallow is very common, and the sufferers are firmly persuaded that their gullets are mechanically closed, and will insist on an instrument, called a probang, being passed down. In one case, the moment the probang was introduced, a sharp fit of hysterics occurred, followed by similar fits in other females, who were present at the time.

The hysterical breast, again, is not uncommon; it becomes painful, tender, and enlarges somewhat. Ideas of cancer immediately arise; now, if these symptoms are not treated with leeches, and fomentations, etc., and if the local affection is made very light of, the irritability and pain will soon subside.

Cough is common. Hysterical cough is hard, loud, and solitary, producing hurried breathing, palpitation, and perspiration; and the cough is sometimes attended with a sort of howl, like that of a dog. At other times, the coughing is rapid, short, and tearing.

Hiccup is very distressing; in one case, the hiccup, loud and discordant, occurred every eight or ten seconds.

Another person, a servant, could not get any place, on account of a continual hysterical eructation, which distressed her continually.

Vomiting of blood is not uncommon. One girl used to vomit, daily, potfuls of dark blood (which did not coagulate); yet she did not lose flesh, and she went through her periods of menstruation quite regularly, only during the periods no blood was vomited; she did not receive any benefit from medicines, but after some time married, and recovered.

Coughing of a fluid looking like blood is met with in hysteria.

Diseases of the joints are closely mimicked by this singular disorder, and so closely as to puzzle exceedingly. Four-fifths of the female patients in the higher ranks of society, who are commonly supposed to labor under diseases of the joints, labor under hysteria, and nothing else.

The knee and hip are usually the chosen sites and joints. One lady, unmarried, had suffered so long and so much from pain in the knee, that she peremptorily and urgently demanded to have her leg cut off, and the attending physician was obliged to temporize; yet it was all hysteria.

Spinal disease is closely imitated; pain and tenderness in the back-bone, with weakness in the legs, are the symptoms; and many a young female has been made to maintain the recumbent position for years even, and have had issues repeatedly made, etc., who labored under hysteria, and needed nothing of the kind, but a totally different mode of treatment. Some fancy they can not empty their bladder; others that they labor under stone in the bladder; others will declare that they are unable to move, and appear to suffer great tortures if an attempt be made to move them; yet no real inability exists, save in the fancy. This disorder is named after its supposed origin in or connection with the womb, and the term hysteria can not well be applied to males; still, that peculiar modification of the nervous system which is observed in hysteric girls is occasionally, though rarely, to be met with in males.

There is one disease, the paroxysms in which may be mistaken for those of hysteria—it is epilepsy; and there is another which it may resemble, when in its chronic and not acute form—hypochondriasis; but, under all circumstances, we must closely observe, and we shall seldom fail to perceive the variety, changeableness, and incongruity of the symptoms in hysteria, the irregularity of their course, and the rapid alterations of violent derangement, and of a nearly natural state, with which they are attended.

The genuine epileptic fit attacks suddenly with a shrill cry; the eyeballs are distorted, teeth ground against each other, pupils of the eyes dilated; the tongue protruded from the mouth; the face swollen, discolored, and the larynx or air-pipe is closed spasmodically. The fit is followed by heavy sleep, and nothing is remembered on awaking of what passed during the fit; and, after many attacks, the countenance becomes inexpressive, heavy, imbecile, or idiotic. The hysterical paroxysm is attended with laughing, crying, and a feeling of the hysterical ball; the muscles of the face and the pupils of the eyes remain nearly in their natural state; but there is a peculiar trembling of the eyelid, which is a sign of great value; and wherever it is present, no matter whether the attack be called hysteric, cataleptic, trance, or mesmeric slumber, it is a sign of safety, and strongly suggestive of the cold effusion; the respiration is of a sighing, heaving character, and after the fit there is more or less recollection of what has passed; nor does sleep follow, though the patient remains tranquil. But the two may be mixed up together.

Hypochondriasis may be supposed to exist when there is hysteria, but they are sometimes intermixed; however, distinctive characters enough do exist. In the former there is a false direction of the moral energy, with inactivity, a concentration of all interest upon self alone, and a disposition to have recourse to a great many medical advisers. Hysteria is accompanied with a fitful activity and a lively interest in the welfare of others, with confidence in the (one) medical attendant. Hypochondriasis is marked by sullen countenance, gloomy ideas, dejected spirits; hysteria by a restless, animated expression, convulsive paroxysms, fickle temper.

Causes—predisposing are, the female sex, celibacy, the period of life comprised between puberty and the fifty-fifth year, a studious and sedentary life, want of good air and exercise, grief and anxiety, impaired health, fullness of blood, the scrofulous tendency.

Exciting causes are, indigestion, confined bowels, flatulence, any cause of exhaustion, suppression of the periods, fullness of blood, violent mental emotions, imitation or sympathy, tight lacing.

Hysteria, uncomplicated with epilepsy, is seldom attended with danger in females; but in males it may end in mental unsoundness.

One marked difference between hysteria and organic disease, if the disorder has continued long, is that, however long the suspicious symptoms may have lasted, there is no correspondent wasting

away, or no commensurate impairment of the general health, which there would be if organic disease had prevailed so long.

Treatment.—Treatment is divided into that during the fit, and that between the paroxysms to prevent their recurrence.

First, during the fit, loosen the dress. Prevent the patient from doing herself any injury during her struggles. To put an end to the fit, cool air, and if the patient can swallow, give four table-spoonfuls of the assafetida mixture:

Assafetida Mixture.

No. 189. Assafetida.....	2 dr.
Water.....	1 pint.

Rub together by degrees; or, 30 drops of ether, with 15 or 20 drops of tincture of opium in camphor mixture; or, a drachm of ammoniated tincture of valerian will answer.

When she can not swallow, apply stimulating vapors to the nostrils, smelling salts, etc. At the same time we should administer an injection, made by mixing two drachms of assafetida in half a pint of water, by gradually rubbing the assafetida and the yolk of an egg together, or, instead of the egg, an ounce of soft soap. Another useful injection is the turpentine injection. Half an ounce of turpentine is mixed with water in the same way as the assafetida.

Or, half a pint of ice-cold water thrown into the back passage, or applied in front of the lower part of the body.

Cold water should be freely dashed over forehead, face, neck, and chest; and this effusion of cold water, more or less forcible, is often of great service, not only in shortening the fit, but sometimes in preventing it.

The following remarks are so true, and have been so often verified in my practice, that I can not refrain from making an extract from Dr. Watson's Lectures:

"In those long paroxysms—if they may be so called—in which some other disease is simulated by hysteria, the cold effusion is a most valuable resource, especially in those forms of the disorder in which a limb is permanently bent or incapable of motion. In several instances in which such contraction had existed for a long time, it has yielded to the cold douche. Dr. Corfe, as I stated before, takes much pains with these cases. He pours cold water from a tea-kettle, or any other convenient vessel, in a small stream, from a moderate height, upon the contracted limb. It has been

bent up for weeks, perhaps; no power that you are able to exert can extend it, and any very forcible attempts to straighten it give the patient extreme pain. After the stream of water has been kept up for a short time, the patient complains of it very much; but Dr. Corfe is inflexible—more so than the culprit limb; he goes on. Presently the limb begins to tremble, the tight state of the muscles is evidently on the point of yielding, and in no long time they are entirely relaxed and manageable, and the limb becomes as manageable as ever. It often happens that the state of contraction recurs; but a repetition of the douche has always the same good effect, and by degrees the habit is broken, and the patient set free. It requires some determination to put this expedient in practice. The patient looks upon you as a monster of cruelty, and in private, the friends will not always allow such rough treatment, as they consider it. Dr. Charles Clarke, who saw a great number of these cases, which are more common in the upper than in the lower classes of society, is a great advocate of this ducking system. He recommends a ‘sudden and lavish’ application of water to the face, or the immersion of the whole body. He describes the class of patients in whom the hysterical affection which is curable by that method occurs, as being generally females of a pasty complexion, fat, pale, and weak, or such as evince the ordinary signs of debility, a feeble pulse, cold extremities, and purpleness of the parts distant from the center of circulation. The age of the patients varied from ten to thirty years. In many of them the ‘periodical discharges were imperfect or absent.’”

A case of trismus (locked jaw) is also related by the same physician: “A young lady for many days had been unable to open her jaws, and, therefore, she could neither speak nor eat. At last Dr. Clarke was called in to see her. He presently comprehended the nature of her ailment, had her placed with her head hanging over a tub by the side of the bed, and proceeded to pour pitchers of water on her face. Before he had emptied the second the patient began to scream and complain, giving very audible indications that she could open her mouth. ‘I say, although these patients get great relief by the treatment, they do not like it; and if convinced it will be put in force, will generally contrive not to require it.’”

The author, when physician to an infirmary, in one of the wards of which hysterical seizures from moral contagion, or from a principle of imitation, happened to be very frequent, soon stopped

every attack by employing the sluicing of cold water, and having a large vessel full of it ready for the nurses to use on the slightest indication of a seizure. The actual application of water was not needed after the first time.

Many ladies of firm intellect, and of some energy of character, can conquer and have conquered the hysterical seizures, and the tendency to them, by moral effort alone. Of this I have witnessed several gratifying instances; while, on the other hand, I am sorry to say that I have lost the patronage of several of my patients, whom I had, as in duty bound, advised to exert this power of repressing hysterical tendencies. I told them what they might achieve, if they chose only to try. They preferred an useless sympathy, and the employment of all the numerous remedies given on similar occasions.

During the intervals our efforts must be exerted to regulate all the secretions, and to impart as much vigor and tone as possible to the system. How this is to be done need not be detailed to those who have read the preceding pages.

But, as in hysteria, the disorder consists in a peculiar state of the nervous center, which may produce the symptoms either spontaneously under ordinary influences, or by irritation communicated from other organs. It may be divided into the idiopathic or sympathetic, for the convenience of considering the treatment. In the idiopathic we may have no evidence of disease anywhere but in the nervous matter of the head and spine, and we are, therefore, left to treat it according as it may affect the circulation.

Now, the circulation has, by Dr. Thompson, been supposed to be in one of two states—a state of congestion and the atonic state. The state of congestion generally manifests its attacks in the form called regular hysteria, occurring mostly just before the expected period. The convulsions are severe, the face flushed, the arteries of the neck and head are pulsating violently, and a fatal coma has followed in some cases.

It is in this state that blood-letting is not only safe, but necessary; cupping, leeches, or even the lancet may be employed; the volatile tincture of valerian; no brandy; cold to head; a sharp purgative or two, and injections. Late hours, hot rooms, feather-beds are prejudicial.

Sometimes little blood-letting will be necessary, if the patient will bear a sufficiently reduced diet.

Local congestion, wherever situated, must be met by local means. If there is headache, flushed face, and delirium, or some form of insanity, or the person lie unconscious of those around her, cupping to the nape of the neck, or a drachm of turpentine, rubbed together with mucilage, with thirty drops of tincture of capsicum, thrice a day, may be given. Aperients and aloes are necessary often.

When the spine is observed to be puffy or tender, and the symptoms before related are discernible, a few leeches to the tender part; blisters or the tartar emetic ointment; a blister on each side of the spine. A case of vomiting (seemingly hysterical), of two years' standing, was thus cured; and palpitations, teasing cough, may thus be relieved. Ether may also be given; so may mercury, to a slight extent.

When there is a spasm and closure of the organ of voice, cold water to the face, and salts to the nostrils. We should tickle the throat and swallow, with a feather.

Firm closure of the jaws is overcome often by compression of the muscles between the chin and bone in the throat, or of the projecting cartilage in the throat.

A drum-like belly requires turpentine, or alum in considerable doses, while the lower spine is rubbed with stimulating embrocations.

Mercury is usually prejudicial, if given beyond occasional doses; but it is useful in the case of the obstinate barking cough which has been described.

The atonic variety is attended with less vascular disturbance, requiring less depletion, and more tonic or strengthening treatment.

Sympathetic or secondary hysteria is dependent, generally, either on derangement of the womb or of the bowels.

In the latter case, there may be torpor or irritation in the bowels. Irritation is marked by local symptoms—distended and tender belly, pain after eating, tongue with red papillæ or points on it, thirst, etc., with more or less hysterical signs, or history of preceding attacks of hysteria.

Leeches, cooling saline medicines, with prussic acid; twenty or thirty drops of sweet spirits of niter may be added to each draught, if the urine appear muddy.

If the periods are, as often happens, too profuse, rest, liquor of acetate of ammonia. For an aperient, castor-oil.

For palpitation and flatulent colic, the assafetida injection. The diet must be regulated, stimulants avoided.

The torpor of the bowels requires a stimulating aperient; galvanism often helps.

Uterine hysteria is attended with the periods too profuse, or too scanty; or there may be a white discharge. The mode of treating these respective varieties may be deduced from the treatment laid down in the previous pages, for each separate state.

For the pain in the side—which is neuralgic, and which is seated between the cartilages of the fifth, sixth, and seventh ribs—the tartar emetic ointment rubbed into the corresponding part of the spine, has been strongly recommended; leeches may be applied; also a warm flannel, dipped in warmed spirits of turpentine.

For hysterical affections of the joints, no blistering, but belladonna plaster, or embrocation; a tepid lotion of spirits of rosemary and camphor mixture, or a cold spirit lotion. If the pain and other joint symptoms intermit, the sulphate of quinine. Marriage is to be recommended or not, according to the existing state; exercise, country air, with amusing or useful employment. Excessive sympathy should be avoided; yet kindness tempered with firmness should be observed toward all hysterical persons.

STERILITY, OR BARRENNESS.

Female unfruitfulness is a great grievance to almost every female. It often depends on causes which can not be removed; but then, at other times, the obstruction can be obviated. Those cases which depend on diseases of the ovaria (inward parts near the womb) can not be discriminated from others.

Sometimes the membrane called the hymen is imperforate; that is, has no aperture in it, which it should have, and it resists firmly all ordinary pressure to break it through. It becomes necessary to divide the membrane by means of a knife, which is soon done, and has been done by the sufferers themselves, though such an operation should never be attempted by any other person than a professionally-educated one. Usually this state of the hymen will have been discovered before marriage; for, with an imperforate hymen, the periodical discharge could not come away. Where the hymen is not altogether imperforate, the hole may be enlarged by a bit of sponge or of lint, rolled into the form of a bougie, and

then dipped in a composition, made of one-third white wax and two-thirds of lard. This is smooth and stiff enough, and yet not too stiff to hurt the parts. It should at first be half an inch in diameter, which may be gradually increased to an inch or an inch and a half. It should be introduced every evening, and allowed to remain two or three hours, or as long as it can be borne.

In the barrenness which is accompanied with signs of want of power in the system, the atonic kind, nutritious diet, and all kinds of strengthening measures must be adopted. Generally we find that those have the most children whose diet is far from being so luxurious, or even nutritious, as that of the upper classes. Scanty and innutritious fare does not prevent offspring.

A spare diet of milk and vegetables has been enjoined on a married couple, full-bodied and full-blooded, and desirous of children, with great success. Active exercise in the open air must be conjoined.

Generally speaking, a nutritious diet ought to be the best. Some articles of diet seem to possess an exciting power over the generative functions, and not through the imagination either; thus, hempseed and buckwheat have this influence on birds; eggs and sweet milk on horses; oysters, especially at spawning time, fresh eggs, pigeons, lobsters have been prescribed in cases of sterility.

Climate has a great influence with respect to fecundation. A humid warmth of climate seems best to suit, not so much as a means of long life, but as a condition of its easy and rapid production.

Extremes of heat and cold, dryness and humidity, are not favorable.

Removal into a warm climate from a cold one will often induce a tendency to conception.

Sterility is probably seldom caused by disease of the ovaria; for if one ovary is diseased, the other will suffice for impregnation. One lady's body was examined after death, and there was only one ovary on one side; yet the lady had been the mother of eleven children, of both sexes, and on one occasion twins were born.

Many a case of sterility or barrenness is removable or curable. Some change is often wrought in the constitution and generative system by time or change of residence or by medicines, in many of those cases where offspring is vouchsafed, after many years of

married life had passed by, without conception having once occurred.

The physician is continually meeting with cases where children have been born, for the first time, eight, ten, twelve, and even more years, after marriage, and where the married couple had resigned themselves to the prospect of never having any children at all.

Catherine de Medicis, Queen of Henry II of France, had been married ten years to him before she bore him any issue, and then a numerous family followed. Again, Anne of Austria was barren for twenty-two years, and afterward gave birth to Louis XIV.

May we not hope that in these cases the obstacles to conception might have been removed long before, if a searching investigation had been instituted. That the opposing causes were removable, the result showed, and they probably are connected with disorders of menstruation; in most cases there is either a profuse discharge or suppression, or a painful bearing down attack when the periods come on, which bearing down would cause the expulsion of the egg in its early stage of growth.

Polypus of the womb may be an obstacle, though it has not always been so; still, it should be tied and brought away, if feasible. The menstruation should be corrected according to its state, by the means already pointed out.

We should exhaust every possible and imaginable means to bring menstruation to its proper state.

As to cases of abortion, we shall come to them at a future time; the subject of sterility (female sterility) is here alone taken up.

If all means are exhausted, without success, change of residence or of climate must be tried.

INFLAMMATION OF THE WOMB, OR METRITIS.

Symptoms.—Pain increased by pressure on the region of the womb externally, or within the passage, by the finger on the neck of the womb, which feels hot, swollen, and very painful on touching; the pain extends down the thighs and to the loins; there is a sense of weight and of bearing down; a difficulty in making water, and an inclination to do so, often with a swelling of the belly, and a windy blowing up or distension of it. In some cases there are symptoms of hysteria. These symptoms are accompanied by fever, nausea, and vomiting. Slight delirium, impaired vision, and a tendency to coma,

with extreme prostration, startings of the tendons, etc., at the last in fatal cases.

Causes—predisposing, are those of inflammation generally, exciting, are suppression or diminution of the periodical discharge from cold, the use of two astringent injections, mental emotions, physical injuries, blows and falls, child-birth, and local excitement.

Treatment.—The usual course to remove inflammation must here be adopted; blood-letting, general and local, cupping, leeches, the calomel and antimony powders (see No. 40), with five grains of Dover's powder, thrice daily; local fomentations, hip baths, gentle saline aperients, and mucilaginous drinks for the dysury (difficulty in making water); saline aperients are occasionally required, and injections of warm or cold water, as may be most agreeable.

CHRONIC INFLAMMATION OF THE WOMB.

This may arise without the acute having preceded; but often follows if the latter have not been properly treated, and the symptoms are various, affecting the health very materially.

Chronic inflammation causes ulceration, or suppuration, or the formation of membranes, or the enlargement and hardening of the substance of the womb.

Ulcers are situated usually on one of the lips of the mouth of the womb, and can only be detected by the medical man. Matter, where it is formed, is known when, during the periods, matter or pus comes away, mixed with the secretion, and by the patient feeling an increase of the symptoms during the period. When membranes are formed, painful menstruation occurs, which has been treated of.

The symptoms of local weight and pain, etc., have been mentioned under the acute form, only the febrile symptoms are absent. The periods are sometimes suppressed.

Treatment.—This may be gathered from what has been laid down for the acute; but Dr. Simpson particularly advises scarification or leeches to the womb itself, by means of a tube of ivory or pewter, of ten or twelve lines diameter, which is to be introduced gently to the end of the passage; into it from three to six leeches may be put, and they are pressed along with a wooden rod. This should be done every second or third day, and the bleeding encouraged by sitting over or in warm water. Dr. S. says it is surprising to

see the good effects from this local bleeding, even in females who seem weak and ill able to bear it. Hardening of the womb, such as to give the idea of cancer, is thus effectually removed.

As to bringing the leeches away, if any have not fixed, it is easy to do so, by throwing in a little common table salt dissolved in water.

The tartar emetic ointment should be rubbed in, so as to bring out a pustular eruption on the lowermost part of the back-bone.

If there is much debility or exhaustion, gentle tonics and support.

IRRITABLE WOMB.

This is a painful malady; there is constant pain in the loins, and round the brim of the hip-bones. A few days before or after the period, fits of anguish come on; in one instance the pain came midway between the periods. The constant uneasiness, with occasional increase, soon induces the sufferer to give way to the relief afforded by repose, and to stir rarely from the sofa. The general health is soon broken by the worrying pain, and want of fresh air and exercise; then languor, costiveness, and indigestion are added. If the opening or neck of the womb be touched with the finger, the pain is increased to a great degree.

The young and middle-aged are liable, and those of nervous, excitable temperament. Undue exertion, violent jolting, or long standing during the period may excite this disorder. Astringent injections employed to cure whites, once caused an attack.

This disorder differs from prolapse of the womb by the latter being always relieved during a recumbent position; here the pain is only diminished, and it differs from painful or membranous menstruation by the pain being periodical in the latter, while it is constant in the irritable womb.

The issue is, that all are usually much relieved, while many recover completely; there is no danger to life, though time is required for treatment.

Treatment.—To subdue pain and sustain the general health are the objects. Repose must be enjoined for a time, but it should not be indulged in longer than is absolutely needful.

A belladonna plaster to the back; or an injection of extract of belladonna one drachm to warm water eight ounces, night and morning, or an injection of two to four grains to each ounce of dis-

tilled water; or a pill containing one-third camphor and two-thirds of extract of henbane, three times a day; or what I have found useful, twenty drops of tincture of opium and fifteen drops of the wine of the colchicum seeds.

The hip bath or poppy-head fomentations, if they seem to relieve. Gentle, not strong, nor forcing aperients.

Small doses of steel, a regulated diet; but avoid low diet, constant supine posture, close confinement, and depletions of whatever kind.

MANAGEMENT DURING PREGNANCY.

In no situation in life is it more important to know how to avoid errors in self-management than it is in pregnancy; and many a young female incurs much unnecessary risk of miscarriage from pure unintentional ignorance in her novel situation—an ignorance which her natural delicacy prevents her from dispelling, by causing a repugnance to seek information from her medical adviser, or from those who are better informed.

Miscarriage is not only important and likely to be very prejudicial by the immediate sufferings which may be undergone, but also by the habit of miscarriage which may be originated. From the moment of conception, the future mother's duties commence; and the object of the present writing is to point out the errors which are often committed during this state. But, before proceeding further, I would counsel all mothers to dissuade their daughters from marriage, if those daughters are in very delicate health, or are threatened with consumption.

During pregnancy, child-birth, and nursing, there must be a great strain on the natural powers and strength. If these are above or equal with the average proportion, the young mother passes through her trials with her health ultimately unimpaired, and even, if possible, improved; not so with those of delicate and consumptive habit; for, in them, the trial weakens their frame, the consumptive tendency is roused or brought forth into action, and after one or two child-bearings, life is often cut off prematurely.

Diet is the first subject upon which we must caution our readers. It is fancied that an extra proportion of food is necessary for the support of the child; this is a very common and, at first sight, a not unreasonable error.

Yet nature does not encourage this notion; on the contrary, a

reduction in the quantity of aliment would seem to be intended by her, else wherefore the morning sickness? Besides, provision has been made for extra supply, in the suppression of the periodical monthly discharges.

The rules for the diet in the early months of pregnancy are summed up in two words—moderation and simplicity.

Quality and quantity must be looked to; for if, unhappily, the pregnant female give way to fancy, and indulge beyond her powers of digestion, or cause irritation in the stomach by improper food, a state of permanent indigestion may become established, which may operate prejudicially, so far as to weaken the powers and bring on miscarriage. It may require some energy, or even fortitude, to withstand temptation as to diet, yet it should and must be done.

Rules for diet in the latter months are similar; and it is even more important not to err at this time, for vomiting, heartburn, constipation, etc., are readily induced.

Cordials, and especially spirits or wine, are to be avoided, for their effects are doubly pernicious, to mother and to child.

LONGINGS.

These fancies are often the mere offspring of the individual's will, who, under the cover of the risk that the child might be marked if her wishes are not gratified, seeks to obtain whatever she may long for. These fancies are, however, in some cases, the result of actual disorder, and of disorder of the brain, too, rather than of the stomach. They must, however, be firmly resisted from the very commencement, for then they are more easily conquered, though it will require much self-control on the part of the patient. Chalk is often greedily consumed; and Dr. Dewees tells us of a lady who ate such quantities that her bowels were not opened for ten or twelve days together, and then only by injections, which brought away hardly any thing but chalk. She brought on indigestion, and ultimately died, having been rendered quite pale and bloodless, and as white as the chalk itself. She calculated that she devoured three half packs during each pregnancy.

Dr. Merriman relates an instance of a longing for ginger, which had a pernicious effect upon the child. A young woman married to a gingerbread-maker, took a fancy, during her first pregnancy, to

chew ginger. Of this spice she consumed several pounds. When the child was born, it was found to be small and meager; its skin was discolored and rough, much resembling the scaly peeling-off of skin that takes place after some cases of scarlet fever. The child continued in ill health for several weeks, and then died. She had several children afterward, healthy and vigorous. The inclination for ginger prevailed only with her first infant.

I was consulted by a newly-married husband, who told me that his wife had a violent longing for an expensive muff, and had frightened him by saying the child about to be born would be marked with patches of fur, if she were not gratified; and he said the expense to be incurred was greater than he liked to pay, yet sooner than the child should be marked, he would buy the muff. He was assured that little risk of marking the child would be incurred by a refusal. He went away comforted, although he had been told a good deal about mother's marks. The child was born without spot or blemish.

In these days, it hardly need be said that an ungratified wish of the mother can not impress an image of the thing longed for upon the child's body; but there is no doubt, as the above cited cases prove, that an indulgence in eating improper articles may be the cause of seriously impairing the health of the mother or child. Where there is a desire to eat chalk, we may do good by allowing some 30 grains of bicarbonate of potash, to be taken in the compound infusion of gentian, or of any other mild bitter; but medicine must be assisted by the determination of the patient not to give way to her inclinations. (See also page 439.)

COSTIVENESS.

Costiveness generally attends pregnancy, throughout both the early and late months. During the later months, exercise can not be taken, and the bowels will not act. This state and tendency must be obviated immediately; injections are the best means, or one or two of the mild aperient pills, consisting of three grains of compound extract of colocynth, and two grains of extract of henbane, will suffice, if taken occasionally at bed-time; lenitive electuary has been much given, one or two drachms, with sulphur added; but the health must be attended to by taking as much exercise as can be borne, by daily ablutions or hip baths, etc., by regulating

the diet, and by not lying too long in bed in the morning. This last practice is found to be highly conducive to costiveness.

EXERCISE

must be taken during the first five or six months, unless there is a tendency to abortion; then passive exercise, that of riding in an open carriage, should alone be taken. But, in most instances, gentle exercise, so as never to fatigue, may be safely taken. In the latter months, caution as to exercise is necessary, for the first miscarriage is a very serious matter, since it may lead to a habit.

Late hours, and a round of parties, dances, etc., should all be avoided, together with heated rooms; and both mind and body should be kept as quiet as possible.

And here I would counsel against following the present and long-existing fashion of making a rapid tour of hundreds of miles, as the marriage trip. At no time does the newly-made bride require more care and gentle treatment than at this period; yet the fashion has been to whirl her away from kindred and friends, in a state of excitement, to clamber over mountains, and to undergo many discomforts which she needed not to encounter. What has frequently resulted from this? Suddenly the lady is laid up, with symptoms of abortion; and then, without her customary medical attendant, she has to struggle unaided through a very serious trial, while her husband can only stand by and wring his hands. Under similar circumstances, in future, such a guide as this book will prove, it is to be hoped, would, by telling what should be done, relieve much of the anxiety, and do substantial good besides.

From mishaps like these, various embitterments of the future married life may arise—an irritable womb or vagina, inflammation of a wearing chronic nature, a habit of abortion, and many other evils. All heavy exertion must be avoided; nay, even in some persons of delicate health, even riding in a carriage must, during the later weeks, be avoided, if any jolting on a rough, uneven road be expected.

CLOTHING.

When ladies become pregnant for the first time, they are often very desirous of concealing the fact, and so, continue to wear their old corsets and old clothes, without any alteration being made in

them, to adapt them to the increased and increasing size. The corsets should have lacings over each bosom, to be loosened or tightened at pleasure; and similar lacings should be made in the lower sides, to allow for the distension of the stomach.

If, after repeated pregnancies, the size of the stomach has much increased, the muscles, from distension, probably will have lost their tone; then a belt should be worn, to lace at front or back, and to exert a continued and a modified pressure at will of the wearer. A broad flannel roller, from six to eight yards in length, will be very serviceable.

The feet must be well shod, and they should never be suffered to become cold, or wet, or chilled.

BATHING.

If a person have been accustomed to bathe, she ought to continue the practice after pregnancy. After the morning bath, a short walk should be taken, to secure the glow which ought to follow bathing; and this walk should be taken immediately, or as soon as possible.

The body should be wiped quite dry, and as much friction used as can be without detriment. As to the forms of bathing, individuals differ much; some can only bear sponging with cold water in summer, with tepid in autumn and winter. Bay-salt may be added to the water with advantage. The shower bath may be continued, if it have been previously employed, but the shock is too great to be encountered for the first time during pregnancy.

The hip bath is preferred by me, or sitz baths. It should contain from three to four inches of water, in which the patient sits, the water rising to the navel; the feet should be kept warm while in the bath, and a blanket should be thrown round both the bather and bath. In the warm summer months, and at all times in tropical climates, comfort will be derived from tepid ablution every day before the dinner hour. Let the lady sit in a shallow bath, and her servant sponge her with water at 85°, or pour over her a couple of pailfuls of water of the same temperature.

A sitz bath at 85° for a few minutes, before going to bed, every night, is very refreshing.

THE BREASTS AND NIPPLES.

It is needless almost to say that any compression on the breasts and nipples ought to be avoided ; and, in addition to this, the nipples in a first pregnancy should be prepared for nursing for five or six weeks previous to confinement. The skin covering the nipples is generally so thin and sensitive, that the child's lips and tongue, in the act of sucking, soon make them tender and excoriated ; and if this sensibility be not diminished, and the delicate skin rendered thicker and more callous before labor comes on, nursing will, in many cases, be necessarily given up soon after.

Flannels or any thick covering must be laid aside. Daily, upon rising and going to rest, each nipple must be washed, either with green tea, or the infusion of oak or pomegranate bark ; and having been carefully dried, must be exposed to the air for eight or ten minutes, and rubbed gently, during this time, with a piece of soft flannel.

One of the following lotions may be applied :

No. 190. Tincture of opium.....	1 dr
Tincture of myrrh.....	2 drs
Distilled water.....	2 oz
Mix.	

Or :

No. 191. White vitriol.....	30 grs.
Rose water.....	8 oz.
Mix.	

Or a benzoin ointment or lotion is very efficacious. One drachm of tincture of benzoin to two ounces of alcohol, or spirits of rosemary.

Sore nipples and a wet-nurse will thus be avoided, in every probability ; but the nipples are sometimes very small, short, and consequently sunken in ; then they should be drawn out. A glass instrument, made like a tobacco-pipe, and used for drawing the milk from an over-distended breast, may be employed for this purpose. With this instrument the nipples should be daily drawn out, for months before delivery, until they are prominent enough to admit the child to suckle.

What misery to mother and child may not thus be prevented ! Yet do we ever hear of any pregnant female applying to her future accoucher, long before her delivery, to complain of the state

of the nipples? May those who read these passages, and who are in the state described, take warning, and set to in time to obviate evils of most serious magnitude!

I recollect one apposite instance of the danger arising from employing a wet-nurse, in which the child suffered, although the mother is the more likely of the two to be the sufferer. On her first child being born, it was supposed impossible for the mother to suckle her child. He was placed with a seemingly healthy wet-nurse, and was afflicted with scrofula, in its varied forms, through his subsequent life; while his younger brother, who was suckled by the mother, enjoyed a healthy and vigorous state of constitution. Blood-letting during pregnancy is often practiced by many, and the idea of its necessity prevails with the lower classes; yet the practice may be injurious to the mother, by inducing miscarriage; or to the child, by lowering its strength and natural vigor. It may be necessary to undergo this operation in some peculiar cases; but medical advice should always be sought.

Mental emotions in excess should be avoided; for miscarriage has frequently been caused by sudden fright, etc. A calm, equable temper, and a life of quiet cheerfulness and moderately active duty should be cultivated, for the sake of both mother and child; nor should the husband be unmindful of attending to this point, and of sparing his wife all possible annoyance.

Of longings, and of the power of the mother's imagination to mark the forthcoming child, mention has already been made. It would be a useless incumbrance to this book to relate some of the wonderful tales current, and undeniable facts told, of mother's marks on the child from ungratified longings. Dr. William Hunter took the pains to investigate two thousand cases of labor, and asked the woman about her longings, etc., and in the whole two thousand cases, he did not meet with one instance coincident.

Children may be born with various marks and discolorations and deformities; and so are poultry, who have no imaginative parents, who are hatched with extra claws and other deformities; yet if we are to believe in this parental power to produce such an effect, we are forced to believe that the hen must exert this power through the shell; and to reduce the matter to a still greater degree of absurdity, we must account for deformities which we often observe in chickens hatched in dunghills, stoves, or ovens; for deformities appear equally often in such births.

If a pregnant female will, as she ought to do, engage her accoucher early, and long before she expects to require his services, she should consult him on all points, and her mind may rest tranquil and secure.

SIGNS OF PREGNANCY.

Ceasing to be unwell is the first sign. Some have married and conceived without ever menstruating, but these are rare exceptions; or the periodical discharge may be continued for the first three or four months, or even the whole period of pregnancy; or conception may take place late in life, after menstruation has ceased.

Suckling is supposed to prevent conception; and many a poor mother has, under this erroneous notion, exhausted her strength by continuing to suckle for eighteen months or longer. Suckling mothers do not generally conceive during suckling, unless it is protracted beyond the period pointed out by nature.

The continuation during pregnancy of a discharge looking like the periodical one is here mentioned in order to remove the notion, entertained by some persons, of the impossibility that such a discharge and pregnancy can coëxist. In one case, the medical man declared, on this ground alone, that his patient was not pregnant, but dropsical; and actually proposed tapping, from which time alone saved her.

But menstruation may have ceased, and yet pregnancy may occur, when various alarms about disease immediately arise. Wherefore it is well to be aware that there are undoubted facts recorded of these late conceptions. It so happens that toward the end of woman's uterine life, a great disposition to pregnancy prevails.

The succession to an estate in France was disputed because the mother was fifty-eight years old when the child was born.

The cessation of the periods is not a conclusive evidence of pregnancy; and there are many symptoms attending the period of cessation which easily may give rise to the notion of pregnancy, such as enlarged stomach, swollen breasts, while flatulence in the bowels may mimic the child's movements within the mother. What, then, are we to depend upon? When a woman ceases to be unwell, she is not certain from that alone of her pregnancy; but if, toward the third month—the suppression continuing—she recovers her health, her color, and her appetite, she needs no better proof

of pregnancy ; for under disease her health becomes impaired, and various symptoms of disorder arise.

Morning Sickness.—This is a very frequent sign. On first awakening, the woman feels as well as usual ; she rises, and then a sensation of sickness comes on, and retching takes place even while dressing, or after breakfast.

This sickness may occur from the beginning, or two or three weeks after conception. Sometimes it attends only the last two months of pregnancy, or it may be absent altogether. It continues during the first half of pregnancy, and usually subsides when the child quickens ; that is, when the movements of the child begin to be felt. But sickness may arise from other causes than pregnancy ; if so, there will be other concomitant symptoms, and the health will be affected ; whereas, in the sickness of pregnancy, the mother eats, and feels well in every respect.

Enlargement of the breasts is hardly to be depended upon as an evidence of pregnancy ; for they may enlarge from increase of fat, or from suppression of the periods. In this latter case, the enlargement is but temporary.

The nipple is a much more trustworthy criterion. Usually the areola, in some six or seven weeks after conception, is enlarged to an inch or an inch and a half, and it is of a darker color ; but the discoloration may be absent. Then, in pregnancy, the nipple is found turgid and prominent, and upon its surface will be seen little prominent points, from ten to twenty in number, and these prominences enlarge from the sixteenth to the twelfth of an inch, perhaps. Now these prominences, and the dark tint of the areola, with its rose-colored, yellowish hue, are very characteristic. Dr. Bull says he has never seen an instance where these prominences were truly developed without the presence of pregnancy. They may be absent ; but when present, they may be relied on. They appear mostly about a fortnight or so after conception ; and after delivery diminish as the milk leaves.

The presence of milk is said to be a sign of pregnancy ; this is an error ; for milk has been secreted when there has been no pregnancy, in women who have ceased to menstruate, and even in men ; of all which occurrences there are undoubted records.

Quickening.—This is the first sensation the mother feels of the life of the child within her womb. It seems at first to be like a bird fluttering, and may come on so suddenly as to cause the mother to

faint or to fall into hysterics. It recurs after a day or two, and then soon becomes more frequent and manifest.

The period when this quickening takes place is uncertain; the time usually assigned is four months and a half, but it differs in different women, and even in the same women at different times.

Dr. Bull, from his own calculations and tables, deduces that it takes place more frequently between the twelfth and sixteenth week than before or after these periods. Before the third month quickening seldom arises.

Still, my readers must not be alarmed if no quickening occur, for it is sometimes, though rarely, absent, and yet pregnancy exists.

If this quickening have attended former pregnancies, the sign is to be relied on, and is, perhaps, not to be mistaken. If the case is a first pregnancy, and doubtful, the occurrence of this sensation removes all further doubt, provided it grows stronger and stronger until the movements of the child are distinctly felt.

THE PREVENTION OR RELIEF OF THE DISEASES OF PREGNANCY.

A knowledge of the means to prevent or relieve the discomforts of pregnancy should be possessed by every married woman.

Morning Sickness.—This occurs during the early or later months, and in the former case decreases or ceases after the quickening has taken place.

A fluid, thin, limpid, and watery, is thrown up, and bile may be ejected if the vomiting continue long; then, in three or four hours, the patient feels quite well again, and is ready for her dinner. Now, this arises from irritation of the womb, and the sympathy excited. To relieve this, a compress is recommended. It is a belt from eight to ten inches in its middle and widest part, narrowing gradually to either end, in one of which is a slit through which the other end passes. To these are attached broad tapes wherewith to fasten the belt round the body. It is made of double sheeting or brown holland, lined with India rubber cloth, and has three or four straps passing across it, under which is placed a piece of linen five or six times folded, and previously wrung out of cold water. This wringing out is called refreshing the compress, and should be done every two hours, or oftener if it gets hot and dry. The belt is worn from the breast-bone to an inch and a half below the navel, and so firmly secured as not to admit the external air.

Put this on half an hour before rising, refresh it every two or three hours, laying it aside just before dinner, and, of course, while taking a bath. Should the sickness prove obstinate, it may be reapplied an hour after dinner, and worn throughout the day. If this simple, but frequently efficacious, means fail, let the following draught be taken twice a day for several days :

No. 192. Magnesia.....	15 grs.
Tincture of calumba.....	1 dr.
Distilled peppermint water.....	1½ oz.

Or, a tumbler of warm chamomile tea, or even warm water only, taken as soon as the qualmishness is felt, will, by inducing immediate vomiting, tranquilize the stomach and shorten the attack.

Chamomile tea is made by pouring half a pint of boiling water over two drachms of chamomile flowers, letting the fluid stand for ten or twenty minutes, and then straining. This chamomile tea might prevent the sickness, if taken half an hour or an hour before rising from bed in the morning.

If acid in the mouth prevail, magnesia, or potash, or soda carbonates must be taken—from twenty to forty grains of the two latter, and twenty grains of magnesia, in a wine-glassful of milk. But alkalies often fail, and then acids must be tried—lemonade, or lemon-juice and water, whichever agrees best.

Costiveness must be removed, if it exist, by Epsom or Cheltenham salts every second or third morning, or when necessary.

If the sickness is distressing, it is better to take no food at all for some hours after rising; a little broth or weak beef-tea to moisten the mouth, and then nothing for five or six hours.

Where bile is thrown up, and there are furred tongue, confined bowels, and, perhaps, sick headache, a black draught of Epsom salts and senna should be taken, or blue pill and extract of colocynth. Then effervescing draughts.

To keep the tongue clean, three grains of extract of aloes, with two grains of extract of henbane, two or three times a week, at bed-time. When the sickness has abated, and has left more or less of debility behind it—

No. 193. Quinine.....	3 grs.
Dilute sulphuric acid.....	60 drops
Syrup of orange-peel.....	1 oz.
Water, or bitter infusion.....	5 oz.

A sixth part twice a day.

Should the sickness still continue violent, with fullness and pain at the pit of the stomach, or in the loins and hips, then a subinflammatory state is present, and a few leeches should be applied; and linen dipped in tincture of opium, or poultices with powdered opium sprinkled on them, should be frequently placed on the pit of the stomach.

The sickness, which takes place about the sixth, seventh, or eighth month, arises from the distended womb affecting, mechanically, by its pressure, the coats of the stomach; and the vomiting, if it be severe, may bring on premature labor.

Here, the recumbent position to take off pressure; a few leeches, rest, careful diet, a grain of extract of opium at night, and cloths dipped in tincture of opium to the pit of the stomach; mild animal food, boiled or roasted; chicken, game, mutton, or beef, roasted; stale good bread, mealy potatoes, well-boiled rice, Jamaica sugar for the morning's coffee, and brown bread, form a sufficient list of eatables. Gentle exercise may be allowed; but if the patient over-exert herself in any way, or over-eat, or eat improper articles, a premature labor is not unlikely to be brought on.

HEARTBURN IN PREGNANCY.

Here acid is formed in the stomach, and rises into the throat, causing this unpleasant sensation. The carbonates of soda, potash, and magnesia have been tried, and relieve for a time; so do lime water, Carrara water, etc.; but the best remedy is a teaspoonful of sal volatile, with some magnesia in peppermint water; or this: carbonate of magnesia, 15 grains; liquor of carbonate of ammonia, 10 drops, in peppermint water, in an ounce of camphor julep or water.

Costiveness is to be remedied, if it exists, and the diet regulated.

COSTIVENESS DURING PREGNANCY.

It is easy to imagine how important it is to keep the bowels open; yet it is very common to see that this point is often little attended to. A hardened mass collects in the bowels, irritates the membrane to secrete a quantity of mucus, and slimy stools, with pain and griping, give an idea that the bowels are too loose; yet the hardened feces remain. Chalk mixture has been given for this

state, to relieve the irritation caused by the hardness, when the way to cure was by opening the bowels.

If the bowels threaten to become costive, as shown by the stools becoming harder, and either more scanty or less frequent, let the compress formerly described be first tried.

If it fail, take a hip bath in the morning, at the ordinary temperature in summer, and in winter at 65 degrees, sluicing the stomach with water; then take a short walk.

If this fail, an injection of warm water or of gruel.

Of milk of sulphur, as much as will lie on a five-cent piece, put on the tongue and washed down with a glass of water, immediately before breakfast, will often succeed as the most complete imitation of nature. I give compound decoction of aloes, or baume de vie, as it is called, every night, or every night and morning. Stronger pills may be required, but hardly ever be needed, if the injection be repeated often enough. Strong aperients lose their effect, and require to be given in increasing doses, which do harm by causing irritation.

DIARRHEA, OR LOOSENESS OF BOWELS, DURING PREGNANCY.

This looseness of bowels may depend even on a costive state, or rather on a retention of the hardened excrementitious matter; but too frequent motions may also depend on irritable bowels in this state. We should see if the tongue is clean or slightly white, and whether the appetite is good; if so, no medicines are necessary, but merely caution as to diet. But if the stools are liquid, dark-colored, and very offensive, the tongue coated, breath offensive, and there is loss of appetite, then the following draught has been recommended:

No. 194. Rhubarb.....	8 grs.
Ipecacuanha.....	1 gr.
Dill or mint water.....	1 oz.

When the tongue cleans, an ounce or two of infusion of calumba or gentian, or any of the mild bitters, two or three times a day.

If the looseness continue, flannel should be placed round the whole of the stomach and body; a flannel roller will answer the purpose well. Here attention to diet is important, because its quantity and quality should be such as to leave, after digestion, as little residue as possible, to pass through the bowels.

Mild drinks for the first day or two—barley water or arrowroot without wine; tapioca, sago, and rice gruel, afterward; no solid food should be taken until the bowels are becoming quiet; then chicken, game, roast mutton or beef may be cautiously allowed. Broths sometimes keep up the local irritability; then rice, wetted only with broth or beef tea.

FAINTING FITS AND PALPITATIONS.

Fainting is not uncommon during the early months of pregnancy, and may come on when there has been no previous exertion made; but generally it ensues after exertions. The faintness, with or without consciousness, lasts a longer or shorter time.

The mode of treating it is by recumbent position; cold water sprinkled on the face, smelling salts to the nostrils, and cordials. Avoid all causes—hot and crowded rooms, violent exertions, etc.

As to palpitation, it is the reverse state to that of fainting. They may occur at all times, often after meals, or on lying down at night; mental emotions are a frequent cause.

Treatment.—These attacks are very alarming, especially if occurring in the night, when the sufferer thinks herself in a dying state; yet there is no real ground for alarm. The following mixture should be always at hand:

No. 195. Compound spirits of ammonia.....	$\frac{1}{2}$ oz.
Camphor mixture.....	8 oz.

Of this, two table-spoonfuls should be taken, as soon as the attack sets in, and repeated in an hour, if necessary.

The hands and arms should be plunged into water as hot as can be borne, and great relief has been given by a foot bath as hot as can be borne, or with a table-spoonful of mustard to each gallon of hot water.

Reassure the patient that she need not be alarmed.

To prevent these attacks, take, for about a fortnight, of this electuary a tea-spoonful three times a day:

No. 196. Carbonate of iron.....	$1\frac{1}{2}$ oz.
Syrup of ginger.....	$1\frac{1}{2}$ oz.

Taking care to regulate the bowels by extract of colocynth and henbane pills, or by decoction of aloes (baume de vie). An occasional aperient must not be omitted.

PILES DURING PREGNANCY.

These are often met with, for costiveness causes them, and costiveness is common at this time; and there is also the mechanical bulk of the womb, which may operate as a cause.

The piles appear as little tumors, within or just without the bowel, and they either become solid and firm, or they break and bleed; or there is a large swelling outside the bowel, large in circumference, separable into distinct parts, "resembling a piece of sponge colored, and bleeding occasionally from its surface."

The local symptoms are heat and sense of weight, desire to make water often, discharge of blood perhaps; and if the piles are external, they become irritated by the friction of the clothes, walking, riding, etc. First, clear the bowels by half an ounce of castor-oil; or they may be kept open regularly by the following electuary:

No. 197. Confection of senna (lenitive electuary) 2 oz.
 Flowers of sulphur..... 1 oz.
 Carbonate of magnesia..... 2½ drachms.

Of this, a dessert-spoonful or a table-spoonful once or twice a day.

An injection of either cold water, half a pint, or of warm gruel, may be thrown up—whichever may be preferred—only in introducing the pipe of the instrument, care is requisite to avoid irritating the parts. The aperients should be so managed as, if possible, to act toward the evening, for then a night's repose and a recumbent position diminish irritability.

The local treatment is according to the local state; if the parts are hot and irritable, leeches, fomentations, hot or cold poultices, frequently renewed.

When inflammation is gone, apply on and around the tumors, every night and morning, some one of either of the following ointments:

No. 198. Powdered galls..... 2 drs.
 Camphor..... 30 grs.
 Lard 2 oz.

Or,

No. 199. Powdered black hellebore root..... 1 drachm.
 Lard..... 1 oz.
 Mix.

However annoying the piles may be, pregnancy is not the time to have an operation performed, that of tying them, etc.

Some women never get rid of the piles, which began when they were pregnant, and which, in ninety-nine out of every hundred cases, would be avoided, if proper attention were paid to diet and to keeping the bowels properly open.

The importance of having regard to these points can hardly be overrated; and let every pregnant female keep a watch over these matters, for, if once piles are established, she will assuredly rue her misfortune and her fault during, probably, the whole of her remaining life.

ENLARGED VEINS OF THE LEGS.

This affection sometimes arises during the latter months of pregnancy, but not often; and the veins may become knotty. The pressure of the enlarged womb is the cause.

A calico roller, six yards long, and about three fingers wide, should be put around the limb, and rolled from the sole of the foot up to the knee; a spare diet and open bowels, with more or less rest in the recumbent position, are necessary. If there is local heat, cold water or Goulard water applications will be of great service.

Others complain of swelled legs during the day, and swelled face during the night's rest. The same treatment is applicable.

TOOTHACHE DURING PREGNANCY

is often very distressing, and, if the tooth is carious, have it extracted, though this should not be lightly done. (See TOOTHACHE for applications to the teeth.) And if the pain of the teeth and face assume a neuralgic or tic character, then carbonate of iron, a tea-spoonful twice a day, with an occasional aperient, washing out the mouth and teeth with warm water, and some common table salt in it.

SALIVATION.

A good deal of saliva is often formed, sometimes so thick as to cause nausea and retching; acid, too, attends. Here magnesia, about thirty grains, twice a day, and rinsing the mouth often with lime-water, are the remedies.

DISTENDED AND PAINFUL BREASTS

require fomentations, or sometimes cold applications; Epsom salts every second or third day.

When the breasts are not hot, rub with olive oil, an ounce, and tincture of opium, a drachm, night and morning.

CRAMPS IN LEGS, OR SIDES, OR STOMACH.

These cramps are painful and distressing; walking about will relieve, or rubbing with camphorated oil.

If in the stomach or sides, tincture of opium, twenty to thirty drops, with peppermint water, and tincture of cardamom, sixty drops.

A sitz bath at 85° every night before bed-time, for ten or fifteen minutes, will often prevent these cramps.

VIOLENT MOVEMENTS OF THE CHILD

sometimes prevents sleep. Foment with flannel wrung dry and an opiate draught, not letting costiveness prevail.

THE SKIN OF THE STOMACH

often becomes so distended as to fret, and even crack. Here fomentations, gently smearing with almond oil, and applying spermaceti ointment.

When the size becomes inconvenient, a belt to fit, and a lace behind, is the only remedy; it should press equally, and over the whole stomach, from the pit down to the hips; lying down relieves it.

Discharge during pregnancy, like the periodical, may lead to miscarriage, without proper care. Here perfect repose and lying down, while the discharge is passing away; gentle aperients, careful diet.

THE BLADDER

may be torpid, or it may be irritable; in the first case, the water is retained too long, and the obvious remedy is to empty the bladder at regular periods, and never to allow it to become distended. In irritable bladder, barley-water or linseed tea should be drank,

castor-oil given, and one physician recommends three or four grains of extract of henbane twice a day, for four or five days.

Sometimes the womb presses so much that, on the slightest cough, etc., the water passes off; here lying down a good deal, and the abdominal or stomach-belt may be worn.

If the external parts become irritated, Goulard water, or ice-cold water, and this last will often relieve itching; if not, for itching apply a lotion of borax, $\frac{1}{2}$ oz.; distilled water, 16 oz., and cyanuret of potash, 10 grains.

Leeches are sometimes necessary; gentle aperients always.

THE WHITES DURING PREGNANCY.

(See LEUCORRHOEA or WHITES for the treatment). An excessive discharge must be checked, or miscarriage might come on.

PAIN IN THE SIDE

often comes on in the later months, never in the earlier. It becomes violent after dinner—then lie down; but it here depends on irritability of the liver, and requires active aperients. Calomel and colocynth, and seidlitz powder or Epsom salts next morning. As soon as offensive discharges come away, this pain will subside.

HEADACHE

is very troublesome with some. It may depend on a foul stomach, when there will be furred tongue, bad taste in mouth; or it may depend on fullness of the vessels in the head, when there will be flushed face, dullness of eyes, and giddiness.

For the first, aperients, with warm bath to feet, and cold at the same time to the forehead; for the latter, blood-letting may have to be added.

Jaundice may occur, but it will go off with its cause. Aperients here are also necessary.

MISCARRIAGE—ITS PREVENTION.

It has justly been said that a medical man can do little to arrest miscarriage when the process is once set up, but much may be done to prevent its being set up, and to prevent a habit of miscarrying; and all depends on the prudence and patience of the patient.

The connection which exists in the early months of pregnancy between the future offspring and its parent is delicate, and the union is easily destroyed, but this only renders more apparent the necessity which exists for every possible precaution being taken.

Two hundred and eighty days is the usual term of pregnancy, and the child may be expelled at any part of this period. If this event happen before the beginning of the seventh month, it is called a miscarriage; but it often occurs within three weeks after conception, but most frequently takes place between the eighth and twelfth week. If, during a pregnancy, a woman experience an unusual depression of strength and spirits, without any apparent cause—if this is accompanied with attacks of faintness, pains going and coming about the hips, loins, and lower part of the stomach—*she threatens to miscarry*. If these symptoms are, after a time, followed by the discharge of more or less blood, a partial separation of the child has *already taken place*. If the pains in the loins and hips increase, becoming sharper and more expulsive, and there is a bearing down, with a free discharge of clotted, bright-colored blood, the *child is altogether separated*; and, in fine, if the blighted and dead child is not quickly expelled, thus terminating the whole process, this event may be looked for before many days elapse; preceded, however, in such a case, by the breasts becoming flaccid, the stomach and bowels more or less disordered, and the discharge altered in appearance and offensive in character.

Thus, the progress of a miscarriage is marked by the presence of a discharge, its quantity, and subsequent alteration of color.

Causes.—Shocks or falls, violent exercise or exertion, violent purgatives or emetics, excessive mental emotions, and the force of habit. This last cause is much to be dreaded.

Delicacy of habit, or weakness, on the one hand, and a very vigorous, robust state of the circulation may cause miscarriage.

Treatment is divided into that of the preventive, and that of arresting the miscarriage when it has commenced.

The preventive is, of course, to be put in practice when the female is not pregnant, and after she has conceived. This treatment must be varied according to the state of the constitution.

In a woman of delicate health, feeble powers, and spare habit, every means should be taken to raise the tone of her health. To strengthen both the general and digestive powers, give a pill three times a day of one grain of sulphate of iron, one grain of sulphate

of quinine, and two grains of extract of chamomile or of gentian. After these have been taken four or five weeks, one pill every day, one hour before dinner, may be taken.

Occasional aperients promote the formation of good blood. The sitz bath every morning.

Injections help much in keeping the bowels open; drastic or forcing purgatives are to be avoided, for they irritate the womb and lower bowel.

For diet, one kind of mild animal food, either mutton, tender beef, game, and poultry. Pork, veal, or lamb is to be avoided. Fish is objectionable, because it leaves a large quantity of excrementitious matter in the bowels; mealy potatoes, well-boiled rice, stale bread or biscuit. For breakfast, weak black tea, or cocoa, brown bread, not toasted, and a new-laid egg are the best; and cocoa instead of tea for the evening.

Animal food may, in some cases, be allowed twice in the day; but never in the evening. A glass or two of wine may be permitted at the end of the meal.

An hour or two of rest, not sleep, after dinner. At night a hair mattress, and not a feather-bed, and no curtains to the bed except at its head.

Bathing, or the hip or sitz bath twice a day, is excellent; the temperature should at first be 65°, and gradually reduced to 55°. Used at noon and at five in the evening for five minutes, a quarter of an hour's exercise being taken before and after each bath.

Change of air in some instances.

Those who have had habitual miscarriage should take very great care; they should avoid the chance of conception for full three months after the last miscarriage, because, in that time, the patient's health should be reëstablished; and if the foregoing rules be observed, be reëstablished in better state than before. Then, if pregnancy again occur, redouble all the precautions, keeping the bowels open, using the bath, looking to the digestion, secretions, and excretions, and avoiding all undue excitement of either mind or body.

When the usual time for miscarrying approaches, the patient should lie down more than before, and continue to do so for five or six weeks after the usual miscarriage time has passed, by which time the patient may be safe.

In some of these cases, I have met with the coincidence of a dis-

charge of more or less of whites. I have stopped this by the mild injection of sulphates of zinc and alum, whereby such strength and local tone have been imparted, that I believe the injections, aided by the married pair keeping separate beds, have enabled the patients to go past the miscarrying time, on to their full period.

When miscarriage threatens a female of full, plethoric, robust habit, we must avoid stimulants and tonics, and gently lower the excessive action which prevails. Gentle saline aperients, the tartrate of potass; no bitter infusions, no wine, nor malt liquor should be allowed, but rest in cool rooms, avoiding heat on all occasions. The diet must be sparing. Sitz bath as before, or cold salt water baths.

Injections of cold water, or cold sea-water; but, as before observed, the female syringes ordinarily used are objectionable, because the pipe must be often withdrawn to refill; so, a four-inch gum elastic tube ought to be substituted for the common ivory tube of the lavement pump, which may be of about half an inch in diameter. Several holes should be made in the point, which must be rounded off.

When miscarriage seems to have already begun, and to be in the first stage, previously described, the recumbent position must be constantly maintained, on a cool horse-hair mattress or bed; the diet must be sparing—toast and water, thin gruel, lemonade, sago, etc., with Epsom salts. When the symptoms of the second stage come on, and even here miscarriage may be averted, strict rest, linen dipped in cold or in ice-cold water to the parts, perfect abstinence, and Epsom salts. With these, fifteen drops of dilute sulphuric acid in one ounce of infusion of roses, with some syrup, may be given every four or six hours.

After all miscarriages, the sufferer should keep the recumbent posture for a week or ten days; for, if she do not, and rise from her bed in a day or two, the womb, being still large and heavy, will fall down, forming prolapse or descent of the womb; or else there will be a white discharge more or less profuse.

To sum up, with respect to miscarriage, we may say that if all is done that should be, during the first stage, a female ought not to miscarry; and, during the second stage, there is hope to be entertained, which may be realized; but in the third, all means of prevention are inefficient to avert the miscarriage.

OF CALCULATING WHEN LABOR MAY BE EXPECTED.

The duration of pregnancy, it is now pretty generally agreed, extends to two hundred and eighty days.

But the main question is, to ascertain when conception took place. It is considered the surest way to allow two hundred and eighty days from the day *after the last day* of the woman being unwell. Thus, we are told a lady was taken unwell on a certain day, and continued so three or four days; add one day more to these three or four days, and reckon forty weeks, or two hundred and eighty days from that time.

Ladies should always make a mark in their almanacs—a cross will do—to point out when they menstruated, and another cross would note when the period ceased. This should be done both by married and single; its utility is obvious to the former; and to the latter it shows whether the periodical discharge is becoming more scanty, and does not last so long as before. Yet, for want of doing this, many a lady, when asked the important question. When were you last unwell? is obliged to reply that she does not know, having forgotten. It does not come within the author's scope to give directions how the labor is to be managed, an accoucher being generally engaged for the purpose. But he will direct here how the cord of the child is to be secured, if the infant happen to be born unexpectedly, when no medical man is at hand. Make two ligatures, each consisting of half a dozen threads of coarse, thick cotton. Bring the cord within view, without exposing the mother. With the first ligature, tie the cord about three fingers' breadth from the child's belly, and place the second about three fingers further still from the child; and use just enough force to secure, but not to divide or cut through the cord with the ligature. The navel string may now be cut off with a pair of scissors between the two ligatures, and the child taken away.

SORE NIPPLES AFTER DELIVERY.

These often occasion great distress, which may be avoided if the directions which have been given in previous pages have been followed, for five or six weeks before delivery. Some advise the infant to be put to the breast as soon as possible; but, as in first pregnancies no milk is secreted until after the third day from de-

livery, it had better not be done, since it can only irritate the nipples, and render them unfit for use. After the first child-bearing, the infant may safely be put sooner to the breast.

The child should not be allowed to have the nipple constantly in its mouth during the night; besides injuring the nipples, the child may suck too much.

But if, after two or three days, the nipples seem to be likely to give trouble, a shield must be worn, and Needham's patent shield is recommended as the best; to be worn during the acts of nursing, care to keep it clean being taken.

If the nipples crack or become painful, hot, and dry, but not chapped, apply a bread and water poultice, every four or six hours, and foment until the pain and heat give way.

A metallic shield is worn between the acts of nursing; the other is put on for nursing.

Applications to cure these excoriations have been mentioned (see BREASTS and NIPPLES); but I have never failed with the ben-zoin ointment or lotion. There are other applications, such as sulphate of zinc, four grains to an ounce of water; or, two grains of sulphate of copper to an ounce of camphor julep; or, one grain of nitrate of silver (called lunar caustic) to one ounce of rosewater.

If these fail, the cracks may be touched with the caustic itself, and kept smeared or covered with an ointment, composed of two drachms of honey and one ounce of spermaceti ointment; or thirty grains of Peruvian balsam, with one ounce of spermaceti ointment.

Wash the nipple, before and after suckling, with a little milk and water; and if one nipple alone is affected, let the child be suckled with the other.

Prevent pressure by constantly wearing a glass, made for the purpose, or by any other contrivance.

EXCESSIVE OR UNCONTROLLABLE FLOW OF MILK.

Here the milk tubes may have lost their elasticity, and with it their power of retaining the milk; thus there is a constant draining of milk from them.

It is difficult to manage this defect; a lotion of one drachm of alum to a pint of spring water, or thirty grains of the sulphate of zinc in a pint of decoction of oak bark, may be applied; but always wash away the lotion before suckling.

If these fail, let a glass be worn to receive the milk ; and if the mother's health begin to suffer from the constant drain, then the child must be weaned ; and the sooner the better.

BAD BREAST, OR MILK ABSCESS.

There would not be so many cases of bad breasts, if suckling mothers would but attend to them in time ; when any threatening of inflammation in the breast appears, such threatenings require very prompt attention.

This inflammation, terminating in abscess, may occur at any period of nursing ; but it is usual within a month after delivery, though it may be excited with the first coming of the milk.

In this latter case, about the third day after delivery, the breasts become hard, swollen, and painful ; they increase in size, become knotty or lumpy, very heavy and very tender. If they be fomented and pressed gently, now that the milk is "at its height," a small quantity of milk will be seen to ooze from the nipples. The act of suckling causes pain, but soon great relief follows ; and, as the milk flows, the size and hardness of the breasts diminish.

But the nipple may be flat, or, from some other cause or mismanagement, the milk is not drawn away ; then a bad breast is threatened. To prevent this, give saline aperients ; tartrate of potass, sixty grains every four hours, until the bowels are open enough ; effervescing saline draughts to assuage the thirst, but no other drinks ; foment the breasts every third hour, for five minutes, with flannels wrung out of warm water ; then rub gently, or smear, rather, with a liniment, composed of an ounce and a half of soap liniment, and three drachms of tincture of opium ; then apply a large warm bread-and-water poultice, supporting the breasts by a suspensory silk handkerchief. After some six and thirty hours, relief will be experienced, and milk found in the poultice ; then draw the breasts gently by an attendant, or by means of a breast-pump ; after this, the suckling child may be put to the breast.

The bad breast, which occurs three or four weeks after delivery, is often occasioned by exposure to cold, or by the stays pressing, or by sore nipples. Now, as soon as any uneasiness and heat manifest themselves, or a lump is forming in the breast, or the child can no longer make the milk flow, lumps will form in the breasts, and the milk be suppressed.

No time is to be lost; apply leeches; give saline aperients; order a low and dry diet; suspend the breasts; gently rub the parts with the soap and opium liniment, and draw the breasts occasionally. Six or eight leeches may be applied several times, so long as the pain returns.

The aperients ought to produce two or three watery discharges every day. To apply the liniment, warm a small quantity of it in a saucer; then gently rub it over the breast for four or five minutes; then take a piece of flannel, the size of the breast; cut a hole in it for the nipple, soak it in the liniment, and put it over the breast, covering it with oiled silk, to prevent evaporation. Repeat this every three or four hours; no poultices at this time. Drawing the milk is not to empty the breasts, but only to relieve distension; so, a certain quantity only is to be taken away. Keeping the breast from hanging down is important. Rubbing with hot lard, and then covering with flannel, and ironing the breast with a smoothing iron, as hot as can be borne, has proved highly successful.

The patient should lie in or on the bed, or on a sofa.

If these means fail, an abscess forms; then throbbing will be felt; apply poultices, and as soon as matter is formed, it should be let out.

In some cases which have been neglected, I have seen young mothers who have sought relief for breasts, in which several holes existed, leading to one or more abscesses, and their constitutions have evidently been scrofulous. The quantity of matter discharged, and the preceding pain, etc., have usually much exhausted such mothers. Here I have met with the greatest success from applying the alcoholic solution of iodine; its strength should be that of twenty grains of iodine to one ounce of spirits of wine. This is to be painted, by means of a camel-hair brush, over the distended parts, avoiding the nipple and the discharging apertures—over which last some lint, spread with spermaceti ointment, may be put. The swelling and hardness rapidly disappear, and the matter ceases to flow after a time. The painting (if it may be so called) should be done night and morning; but if that be too frequent, which may be known by the skin shrivelling and threatening to scale off, once a day will be often enough, and even not so often in some constitutions, where the skin is very delicate and irritable. If, on looking at the breast, we find the brown walnut-juice-like color strongly

tinging the skin, fresh iodine need not be applied, but merely wet the part by painting it with simple spirits of wine.

The child should not be allowed to draw the breast if the matter of the abscess is mixed with the milk, or if much of the bosom be involved in the disease.

The milk generally soon returns to the breast; if not, the child must draw its nutriment from the other.

Sometimes a hardness remains, which alarms many mothers, who dream of cancer immediately; yet such hardness may be safely left to nature, or gentle frictions, twice a day, with soap liniment will help; but if the iodine have been used, every particle of hardness is at last dispersed; or if not, by continuing the iodine, it will soon disappear.

AFTER PAINS.

After delivery, what are called after pains may be violent; but they should not be too soon meddled with, as they effect a salutary purpose; still, if they should be too violent, they may be checked by fifteen drops of tincture of opium in some water. They continue usually, off and on, for about forty-eight hours. The patient, if any soiled linen is to be removed, must, on no account, be permitted to sit up in an erect position for one moment.

It is presumed that a proper broad bandage has been put on before the labor commenced; the breadth should be such as will extend from the chest to the lowest part of the stomach. A new towel, that is large enough, will do, and this should be worn loosely during the labor, as it would derange too much to have to put it on afterward.

The room must be darkened, no conversation allowed, and sleep must be sought for by the newly-delivered lady. An attempt to pass water should be made some seven or eight hours after delivery, and if there is any difficulty, warm flannels, wrung dry out of hot water, should be applied. No one must be deceived by a few drops only passing, as may happen; the bladder should be emptied.

On the evening of the second, or morning of the third day, some aperient should be given; and castor-oil is the best, a table-spoonful of which should be poured upon a two-thirds filled wineglass of milk, coffee, or mint-water. If necessary, this must be repeated in four or five hours. Or, what is preferable, an injection of two

table-spoonfuls of castor-oil in a pint of gruel or barley-water, may be thrown up.

As the recumbent position induces confined bowels, they must be watched.

A discharge takes place from the parts, which usually continues two or three weeks, though it varies as to quantity and duration. It is reddish at first, then greenish, yellow, and at last resembles soiled water. If this should ever suddenly stop, attention must be paid as to whether cold has been taken or inflammation set up. In this discharge, an injection into the front passage should be ordered of tepid milk and water, three or four times a day for the first week, and gradually left off.

This discharge may become too profuse, and affect the health and nursing; then a slight injection of alum and tepid water will check it.

Cleanliness is essential throughout, but the linen must be well aired. The milk, in a first confinement, comes into the breasts about the third day; the infant may, however, be sooner applied to the nipple. There may be slight pain at first, which soon ceases, and the previous knotty hardness of the breasts, if any have formed, will soon go off. The infant should be put to the nipple within the first twenty-four hours, as soon as the mother has had a sleep; this is done in order to draw out and form the nipple for suckling, to excite the secretion of milk, and to prevent the knotty hardness which might otherwise arise.

If the breasts remain hard and knotty, and the child can not suck, rub the lumps with warm almond oil, and foment assiduously. The recumbent position should be maintained for the first two weeks rigidly, and occasionally for the third week. Even sitting up, with the legs on a level with the body, should not be allowed; much mischief has so been done; and with the poorer classes, where the women are obliged to get up sooner and go to work, prolapse, or coming down of the womb, is a frequent consequence.

The bandage around the stomach, of which we have spoken, has been tightened according to circumstances; but a properly adjusted belt must be substituted when the patient begins to move about, and the belt should be worn so long as the muscles of the stomach require support.

Diet, for several days after delivery, should be small in quantity and simple in quality. Coffee in the morning, a light pudding for

dinner, and coffee or tea for the evening, with gruel in moderation between times, if desired. On the fourth or fifth day, the wing of a chicken or a mutton-chop may be eaten, with equal parts of barley-water and milk for beverage. About the fifth day, the patient may recline on the sofa, but she must be moved without any exertion on her part; nor should she dress herself, putting on stays, etc. If it is winter-time, the bed should not be left for a few days later.

The ninth day is considered by many nurses as a critical day, but it is no more critical than any other; and the idea would be as harmless as the day itself, did it not excite an anxiety which might lead on to mischief.

After the tenth day, the accouchée may be wheeled into an adjoining chamber, still lying on the sofa.

As to what drinks the nursing mother should have, we will quote an experienced midwife's opinion with respect to wine or beer: "I am daily more and more convinced that a healthy woman is better without either, both for herself and her child. Her own health will be less likely to be deranged; her own feelings and sensations will be infinitely more equal and comfortable, and the milk secreted in her bosom will be more pure and nourishing; and, as a consequence of all this, the child will thrive and flourish better without the stimulant than with it." He recommends the barley milk, above described, as the best beverage for mother and child, so long as the mother can not take active exercise in the open air; but to those who are weakly, the bitter ale may be useful. In such cases we may try it; if no disturbance ensue, we may continue to allow it.

Washing the child the first time is an important operation, for lamentable consequences have ensued, where it has been intrusted to ignorant, unreflecting minds.

The body of the child at birth will be covered with a white, greasy, curd-like substance, particularly about the eyelids, groins, armpits, and various folds of the skin. This adheres very closely, and is difficult to remove; yet if it be allowed to remain, it would become hard from drying up, and cause much irritation. We dare not rub, except in the most gentle manner; the skin of the infant easily excoriates. Water will not act upon it, and soap has very little effect; but lard renders it soluble. Smear, then, the whole of the body with fresh lard; then put the child into warm water

(from 96° to 98° of Fahrenheit), and after five minutes, with a fine sponge, sponge the child while still in the bath, with the least irritating soap that can be got. If the whole can not be removed, leave the obstinate remainder to a second washing. Warm water must always be used to an infant which, up to nearly that moment, has been used to one uniform degree of temperature.

The same accoucher who recommends us to act in this way, cautions nurses to wash the infant in the bath, and not on the lap; for its bones are soft, and incapable of sustaining its own weight in any thing approaching to an erect or sitting posture. In Germany a bath is used well adapted to this purpose; it is made of wood, oval in shape, with a raised portion at one end for the head, and deep enough to contain a quantity of water just sufficient to cover or float the child; and yet none of the dirty water of the bath should be suffered to touch the eyes.

Sometimes there is no milk for the child until the third or the fourth day after delivery; then we may give of asses' milk and boiling water equal parts, or of cow's milk one-third and boiling water two-thirds, slightly sweetening the latter with loaf sugar. A few spoonfuls of one or other of these are to be given through the sucking-bottle, and not from the boat or spoon, to avoid over-distension of the infant's stomach, for the infant will not suck too long.

For the first week or ten days the infant requires frequent suckling, but from the tenth day until the end of the lying-in month, it may be nursed every four hours.

After the lying-in month, night nursing should be done away with; the child should be suckled at ten o'clock at night, and not again until five the next morning, unless the infant is particularly feeble, when so long an interval can not be borne.

When the first teeth appear, the mother will require, probably, some help; and artificial food may be given twice in the course of the day, without any injury to the child. Good fresh cow's milk, with or without water, crushed crackers, sago or arrowroot made with milk; or, if these disagree, weak beef-tea, veal or mutton broth, clear, and free from fat, mixed with an equal quantity of farinaceous food, and a little salt, may be given. The child should never receive its food lying; the head should be raised.

WEANING.

Weaning the child should take place by the ninth, and not later than the twelfth month, unless peculiar circumstances demand that it should take place sooner or later. The weaning must be gradual, by diminishing the number of times every day for suckling the child.

DRYING-UP THE MILK.

This may become necessary from the death of the child, or the impossibility of suckling; and it is usual to apply cold evaporating lotions. These, however, may prove dangerous, and the safest application is, liniment of compound soap liniment, 3 ounces; tincture of opium, 1 drachm; camphor liniment, 1 drachm; or, if this be too stimulating, use the compound soap liniment alone. Apply one of these warm, covering the linen or flannel with oiled silk. We should, besides, gently rub the breast for eight or ten minutes, every four hours or thereabouts, with warm almond oil.

We should not empty the breasts, for fresh secretion is encouraged; but if the distension and hardness are very great, they may be partially emptied. The bowels should be rather free, wherefore a saline aperient should be given every morning to secure this effect. The diet must be scanty; little or no drink, but only solid nutriment allowed. The mouth may be washed out with toast and water, or a little fruit may be allowed.

As to drying up the milk at the regular time of weaning, the mother has been prepared by the child having been artificially fed for some time; but if the breasts give trouble, act as above stated. Aperients must not be neglected at this time.

About the sixth or seventh month, when the teeth begin to appear, the artificial food may be increased in quantity and strength—cow's milk, pure and undiluted, with farinaceous food; and when the grinding-teeth begin to appear, beef-tea, chicken, mutton or veal broth, once a day; but the broth must consist of a pound of lean beef cut into small bits, and then be macerated in cold water for three hours, and slowly heated to boiling; then boiled for a couple of minutes, and strained. A portion of soft-boiled egg may be tried, or a small bread-pudding with one egg in it, for dinner, may be given. Some give animal food at this period, but it has been appositely said that "the practice of giving animal food to a

toothless child is not less absurd than to expect corn to be ground where there is no apparatus for grinding it."

From the sixth month to the end of the second year teething is going on, and consequently irritation is easily excited; wherefore we can not be too cautious about the diet, for, by due attention to it, we may frequently prevent the formation of annoying eruptions, of the thrush, diarrhea, rickets, and may even check scrofula from manifesting itself.

If food disagrees, diarrhea arises, or flatulence and gripings, we should not immediately resort to medicines, but try first what change of food will do; for instance, Dr. Bull says diarrhea may be checked by giving some sago, thoroughly boiled in very weak beef-tea, with the addition of a little milk; or by two-thirds of arrowroot with one-third of milk; or, for a few days, arrowroot made with water only. Costiveness may often be removed by changing the food to crushed crackers steeped in boiling water, with a small quantity of milk added; or Densham's Farinaceous Food (a mixture of three parts of the best wheaten flour and one part of the best barley meal) is useful, on account of the laxative influence of the barley. A table-spoonful is to be mixed with a small quantity of cold water; add half a pint of boiling water, constantly stirring; boil eight minutes, strain; add a small quantity of unboiled, pure, fresh cow's milk, a little loaf sugar, and a few grains of salt.

Flatulence and griping usually are caused either by too much food, or by food over-sweetened, or by its not being fresh prepared for every meal. The remedies are obvious; but we had better give, in these cases, weak chicken broth or beef-tea, freed from fat, and thickened with soft-boiled rice or arrowroot; but, above all things, we should always try what change of diet will do before giving any of the nursery medicines—the gray powder, calomel, rhubarb, etc., which some mothers are too fond of administering.

We will now, to close this part of our subject, advert to various morbid states, which often put the puerperal patient's life in danger; and, first, of

PUERPERAL PERITONITIS, OR INFLAMMATION OF THE MEMBRANE LINING THE BOWELS AND THE ABDOMEN INTERNALLY.

On the second, third, or fourth day after delivery, a severe shivering comes on; then an acute pain in the abdomen is felt low down.

This pain is constant—sometimes increased; but it is always increased on pressure, and by any movement of the muscles of the stomach. The milk and the discharge are checked, if not stopped altogether; the skin is hot; pulse small and frequent, in others full and bounding up to the fingers; the tongue furred, the head aches; the countenance is high-colored; restlessness and sleeplessness; vomiting occasionally; breathing hurried and anxious. As the disease progresses, the abdomen becomes tense like a drum, the fever increases, delirium supervenes; the tongue becomes dry and brown, the teeth covered with dark stuff, as we see in typhus; other symptoms come on, and precede a fatal termination. The causes are contagion, and those of inflammation; and it is, at times, epidemic.

Treatment.—Almost the sole chances of the patient's recovery are derived from early treatment, and from the epidemic being of a mild character.

If seen during the shivering, hot fomentations or poultices over the stomach. Three grains of calomel, with as much James's powder, and half a grain or a grain of opium, should be given; and in two hours an ounce of castor-oil, or some salts and senna. Warm water injections, and also injections of warm water into the front passage, two or three times a day.

If the fever is not very high, the pain not great, leeches should be applied, and we need not bleed from the arm; but if the symptoms run high, one or two bleedings from the arm may be necessary; and we must then rely on four or five grains of calomel, with five of Dover's powder, every third, fourth, or fifth hour, till the gums are affected, when amendment and recovery usually follow.

When the hot skin yields, and the abdomen remains distended, with sinking of the strength, cold legs, weak pulse, and little or no pain, do not despair, but give stimulants—wine, brandy, and ammonia, freely administered. (See TYPHUS FEVER.)

MALIGNANT PUERPERAL FEVER.

Shivering not so marked as in the foregoing; the pain less severe, deeper seated, more circumscribed; the pulse small, rapid, weak, numbering from 130 to 160 in the minute; skin yellow; anxiety; mind wandering; tongue white, then yellow, then brown; vomiting, hiccup, diarrhea; the motions are very offensive; the usual

discharge is of bad smell, or is altogether suppressed; delirium, drum-like stomach.

Treatment—similar to the foregoing, only bleeding is hardly ever necessary; leeches are useful; fomentations, the calomel, antimony, and opium powders. When collapse or sinking comes on, stimulants and support.

Convalescence is often protracted; and, in some cases, deposits of matter take place in various parts—in the joints, in the womb, in the eye. Strong broths, jellies, wine and cordials must be given early in this fatal disease, even while we are applying leeches; and the disease attacks so insidiously that we should take alarm, and be on the watch, when we find the pulse keeping up above 100 for some days after parturition.

PUERPERAL INTESTINAL IRRITATION.

General uneasiness, if the bowels have been neglected; loss of appetite, tongue furred; chills, then flushes; headache, frequent pulse; abdomen large and tense; deep-seated pain, but slight, and *relieved by pressure*; vomiting, diarrhea; all evacuations offensive; stools dark, slimy or watery; flatulence, badly smelling breath.

Treatment.—Empty the bowels by castor-oil or Epsom salts and senna; enemata (clysters) of warm water; the gray powder three grains, with three or four grains of Dover's powder, every four hours. For diet: arrowroot, gruel, broth, jelly, milk, with soda or seltzer water, is grateful. Nourishment, but not stimulus, unless signs of sinking come on.

FALSE PUERPERAL PERITONITIS.

This occurs in delicate nervous females, after severe after-pains, and sometimes after an active purgative. There will be slight shivering; pain and tenderness of the abdomen; tongue slightly coated; pulse rapid but soft; skin not hotter than natural, or but little hotter; no anxiety of countenance; strength not much impaired.

Treatment.—Fomentations, poultices, sweating medicines, opium, with mild laxatives occasionally. Five to ten grains of Dover's powder, every four or six hours; or twenty or thirty drops of tincture of opium, and repeated if necessary. The attack seems allied to hysteria.

MILK FEVER.

In all lately-delivered women, after or about the third day, there is some disturbance of the nervous and vascular systems.

Shivering occurs; then pain in the head, with throbbing; light and sound annoy; the pupils of the eyes are contracted; countenance flushed; pulse frequent, full and hard; skin hot and dry; tongue dry and coated; thirst excessive; the milk is no longer secreted; the breasts become flaccid; delirium sometimes sets in.

Causes.—A heated atmosphere, undue exertion, mental agitation, excessive use of stimulants.

Treatment.—We must subdue excess of action by aperient medicines; saline medicines, with the sixteenth of a grain of tartar in each saline draught, every four hours; low diet, rest of mind and body; cool air, and diluting drinks.

If symptoms are severe, blood-letting; tartar emetic, 1 grain in 6 oz. of water, a table-spoonful every four hours. If a feeling of sickness ensue, discontinue the medicine; mercurial purgatives, such as calomel and colocynth pills, 2 grains of calomel and 6 of colocynth; cupping or leeching the head or temples; cold lotions to them; hot water to feet, or mustard foot baths. Draw off the milk gently, and foment or poultice the breasts; also apply the child to the nipple to stimulate secretion.

Our treatment of all these disorders is based upon general principles. Inflammation is to be subdued whenever it exists; the strength is to be supported, when it is failing, by stimulants, etc.; and where there are nervous symptoms, much pain, irritation, or restlessness, opiates must be resorted to.

CHAPTER VI.

DISEASES OF CHILDREN.

A HEALTHY child has all the parts well rounded ; and it has been observed that, whether the limbs are bent or straight, every line forms a portion of a circle ; no muscle can be seen through the skin, nor the joints be found easily, except by observing the bending of the limb.

Whenever the joints can be seen, the child is not in health ; and if the anterior part of the chest is raised, while the sides are sunken, it is a sign of ill-health ; if the belly project too far, and is too full or hard, there is disease probably ; also, if it is concave or sunk. The child should be neither too fat nor too lean.

Drawing up of the legs toward the body, with crying and pain or local tenderness, are signs of disease.

A young child in health seldom raises its hands above the mouth ; when it does, there may be too much blood, or some disease in the head and face.

Starting from sleep, or starting when awake, portends disease ; though it may be caused by irritation of stomach or bowels, easy to be removed.

The eyes should be clear and lively, and not thrown upward ; if children cast their eyes upward, it is probable that opiates may have been given them ; and if the eyes have gained the habit of being directed to the same object, and they afterward lose that power, disease of the head is not unlikely to come on.

Contracted pupil shows irritation.

The stools, again, are indicators of disease. The natural motions are two, three, or four, in every twenty-four hours, and the natural color is a light yellow. The first which pass after birth are generally black ; if they are green, white, or clayish-colored, or mucous or watery, there is irritation in the bowels.

It has been said that the infant's first motions are dark or black, consisting of what has been called meconium; and the retention of this is considered to be so prejudicial that castor-oil or calomel is forced down soon after birth. This practice is injurious, and in respect of calomel especially so; because such a drug as calomel must irritate the tender and highly sensitive bowels of the newly-born infant.

Castor-oil is not so irritating; and when the abdomen (belly) of the child is full, and no evacuation has taken place for five or six hours after birth, half a drachm—that is, thirty drops—of castor-oil may be given; before that period of six hours, it is better not to disturb or irritate its stomach by any medicine whatever.

The mother's milk has been said to possess a purgative quality; but it is probable that it acts and excites by merely mechanical distension.

The child should not be applied to the breast until there is an appearance of milk in it, which often happens after ten or twelve hours' rest. And during the first five or six months the infant must be suckled during the night as well as the day, but at regular intervals of four hours.

The child should not be suffered to retain the nipple in its mouth.

The mother is able often to supply milk enough for the first seven or eight months; but after that time, the infant would be insufficiently nourished, if it depended on the mother alone; then food must be given; for the child must not want nourishment that will agree with it.

If the deficiency of food can be supplied by artificial food, without the infant suffering, no further change is necessary; but if this can not be done, a strange nurse must be employed.

Great care must be taken in the choice of a nurse; she should be examined, so that no unsoundness or defect escape detection. She should not be too old, and the more recently she has been confined, the better; and if she has had one or two children it will be all the better, because she will probably have more milk secreted.

If we are forced by circumstances upon artificial feeding altogether, great care is required.

The best substitute for human milk is good cow's milk; but as it is thicker and whiter, and not so sweet as human milk, we must add to two parts of it, one of very thin barley-water, and sufficient white sugar to make it sufficiently sweet.

Asses' milk, again, approaches more nearly what we require; but it is richer, and requires to be diluted with about a third part of water. This can be used if the cow's milk disagree.

As the child becomes a little older, thin bread pap may be given, and occasionally some light beef or chicken tea. Thin bread pap is made by steeping soft bread in hot water, with the addition of a little sugar and fresh cow's milk.

The spoon is the best vehicle, better than the sucking-bottle; and the child must not be placed horizontally on its back; but its head should be kept elevated, and its actions carefully attended to, so that we may be enabled to stop the moment it appears to be satisfied.

The food will require to be varied, since one kind may agree well with the infant, at first; but may, after a little while, derange the bowels, producing gripes, acidity, and purging, or costiveness. Prepared barley, with water and unboiled or boiled milk, or arrow-root, can be given.

One rule requires strict attention; to keep the bottle, or whatever is used for this purpose, very clean. It is of great importance to prevent acid fermentation in the child's bowels.

Every kind of food should be given tepid or lukewarm.

MEDICINES FOR CHILDREN.

The quantity in which medicines ought to be given to children differs very considerably from the doses taken by grown-up persons. These doses are to be regulated chiefly by the respective ages; and the following table has been constructed, which may be received as a guide. If we suppose the dose for a grown-up person to be sixty grains, or a drachm, then the quantities are thus graduated:

Table for Doses.

Let the dose for an adult represent 1	say	1 drachm.
" for a child 7 years old	$\frac{1}{3}$	" 1 scr. or 20 grs.
" " 4 years old	$\frac{1}{4}$	" 15 grs.
" " 3 years old	$\frac{1}{6}$	" 10 grs.
" " 2 years old	$\frac{1}{8}$	" 8 grs.
" " 1 year and	$\left\{ \frac{1}{12} \text{ or } \frac{1}{15} \right\}$	5 or 4 grs.
	under..	

But it is a good practice to give medicines in divided doses, so as to insure the result, neither more nor less.

Opiates, if ever given, demand close watching ; and purgatives must be quickly repeated, or much time may be lost.

They should be given either in a liquid form, or in that of powder ; and those should be selected which are most free from nauseous taste or smell. Sugar or syrup may be added. Powders should never exceed in quantity ten grains, on account of the bulk. The dose of a liquid is from a tea-spoonful, or a drachm, to that of a dessert-spoonful, or two drachms.

Alteration of diet will often supersede the necessity of giving any medicines at all ; and this should be always attempted. The infant can not exist many hours without food ; it must not, therefore, be left too long without some kind of sustenance. During febrile or inflammatory complaints, barley-water, whey, or thin gruel should be given ; the breast-milk, even, may be too stimulating, and will require to be mixed with water ; or lighter drink must be given, but at short intervals.

If considerable debility be present, the diet should be more nutritious.

Mercury.—Mercury, which, given in sufficient quantity, will salivate almost any one, does not seem to be capable of salivating an infant.

We can not, therefore, administer this remedy to salivation when we willingly would do so, as in cases of croup, inflammation of the brain, etc. ; and this is the more to be regretted, on account of the natural irritability of the child's stomach and bowels preventing us from using another medicine, which powerfully controls inflammation—the tartar emetic. Mercury, however, is still of great service ; probably by its influence over the secretions. Calomel is a very useful medicine in the hands of the medical practitioner ; but it should be given with caution by any one else. Yet some mothers seem to think it almost a remedy for every disorder in the child. Calomel acts very speedily on the secretions ; and the motions soon give evidence of its power, by their unnatural appearance. They at last become of a greenish color ; and these green motions are called bilious motions, the green being derived from the vitiated bile, which, doubtless, say the mothers, was doing, or was about to do, much mischief. And then more calomel is given, in spite of the gripings, the drawing up of the child's legs toward the abdomen, of the local heat or tenderness, and a state of inflammatory irritation is brought on.

That this statement is correct, any mother may convince herself of by discontinuing the calomel; and if inflammation of the bowels have not already been excited, the motions will réassume their natural appearance, and all signs of local suffering will cease. The greenish appearance can soon be altered by giving a little carbonate of potash or soda, two or three times a day, in some dilute dill water.

The dose of calomel is from one-fourth of a grain to two grains; and it is usual to give some castor-oil, or other aperient, in two or three hours.

The powder called gray powder, consisting of mercury with chalk, or with magnesia, is a very useful form of medicine for children. In diarrhea it may be combined with Dover's powder. Dose for an infant is one grain, and for a child two years old, two grains.

The Aromatic Spirit of Ammonia acts as an antacid and stimulant. Flatulence and acidity are relieved by it; and whenever there is debility or exhaustion from fever, erysipelas, convulsions, etc., we shall find it a very useful remedy.

Dose from two to eight or ten drops, in water, or in dill water.

The Carbonate of Ammonia, or *Smelling Salts*, is another form of ammonia, and useful for purposes similar to those requiring the spirits of ammonia. Dose, one grain to an infant under one year old, in syrup and water; two grains, if older, up to three or four grains.

Antimony may be given to excite sweating or vomiting, according to the dose. James's powder is very valuable in fever, and so is tartar emetic in various diseases—croup and inflammations. One grain of James's powder to a one-year old infant, two grains to one of two years of age, and three grains to older children. Give it in molasses, syrup, jelly, or gruel. The dose of tartar emetic is from one-eighth to one-sixteenth of a grain. Its action is followed by depression, hence its use in inflammations. If irritation exist in the stomach and bowels, we must not give it.

Antimonial Emetic Mixture.

No. 200. Distilled water.....	1½ oz.
Tartar emetic.....	1 gr.
Simple syrup.....	½ oz.
Mix.	

Here one drachm, or about a tea-spoonful, contains the sixteenth of a grain; and give one, two, or three tea-spoonfuls, every quar-

ter of an hour, until vomiting occurs. The action will be more certain and less violent, if half an ounce of ipecacuanha wine be added. Some children can not be made to vomit.

Camphor.—This exhilarates and causes perspiration; but many do not like to give it to children. Camphor mixture, or camphor julep, is the form; a table-spoonful to a child two or three years old.

Castor-oil is particularly useful. The bowels are left relaxed; 30 to 60 drops the dose, with a little sugar.

Castor-oil Emulsion.

No. 201. Castor-oil.....	1 oz.
Burnt magnesia.....	2 drachms.
White sugar.....	3 “
Oil of aniseed.....	2 drops.
Mix.	

One or two tea-spoonfuls to a child one or two years old, and repeated if necessary.

Chalk.—Prepared chalk, or the compound chalk powder, is a very useful antacid; and whenever the motions are too free, or greenish, or of a green color, 3 or 4 to 10 grains, mixed with sugar, gum arabic, and water, will relieve. The green color is supposed to arise from the action of the gastric juice upon the bile, and such stools do not demand calomel. Eruptions on the skin are usually mixed up with, or arise from, acid in the stomach; and chalk will do good.

Compound powder of chalk is one form in which to give chalk; dose, 2 to 5 grains.

Hop relieves pain and calms irritation; and since it is so very dangerous to give opiates to children, this hop may prove a good substitute for opium; at least, it ought to be first tried.

Of tincture of hop, give 5 or 6 drops, to children of two or three years of age. Of the yellow powder, called lupulin, 3 or 4 grains may be given in currant jelly.

Iron is a very useful remedy; and when given, in the proper cases, to pale, flabby children, it adds to the strength and comfort without causing any excitement. The wine of iron is as good a preparation as any for children; of which a drachm may be given, two or three times a day, in water, to a child two or three years old; but 2 or 3 tea-spoonfuls may be given, as the age increases on to thirteen or fourteen.

The tartrate of iron, which has but little of the peculiar taste, and which is very soluble, is often given to children.

Chalybeate Powder.

No. 202. Tartrate of iron and potash.....	2 grs.
Aromatic powder.....	1 gr.
Sugar powdered.....	2 grs.
Mix.	

Thrice daily.

Iodine is a tonic, and may be administered to the youngest child. The tincture of iodine may be given, 5 drops in some sweetened water, only adding the sugar at the time of taking; for else decomposition may ensue. Or the compound solution of iodine may be given to a child about seven years old, from 15 to 40 or more drops, in water sweetened with sugar, or syrup; but the sugar must be added at the time of taking.

There is a compound of quinine and iron which is very useful.

The syrup of quinine and iodine is a powerful tonic.

Ipecacuanha is expectorant or emetic, according to the dose. Half a grain or a grain, with sugar, every quarter of an hour, till it causes vomiting; or 20 to 30 drops of ipecacuanha wine in like manner. After a year old, these doses may be doubled. A syrup of ipecacuanha is much used; and an ounce of the syrup contains 16 grains of the ipecacuanha, or an infusion is made by digesting 2 drachms of the root in 4 ounces of boiling water, then adding sugar.

One good formula is this:

Emetic Mixture.

No. 203. Water.....	1 oz.
Ipecacuanha wine.....	$\frac{1}{2}$ oz.
Simple syrup.....	$\frac{1}{2}$ oz.
Mix.	

Of this, 1 or 2 tea-spoonfuls may be given, until vomiting comes on.

This may be used when tartar emetic is forbidden by irritability of stomach or bowels; and so far from increasing the action of the bowels, and causing exhausting motions, as tartar emetic is apt to do, it rather tends to restrain their action.

When vomiting commences, usually in from fifteen to twenty minutes, or is about to commence, drinks should be taken to promote the operation—barley-water, etc.

When ipecacuanha is desired to act, as what may be called an alterative, very small doses are given; to a child under two years,

a twelfth of a grain may be given twice a day, with 3 or 4 grains of powdered gum arabic, the latter covering its nauseous taste, when the child is purged, or suffers from dysentery, or from fullness of the head, or where the cough requires to be rendered loose. It probably acts by keeping up a slight nausea.

When an overdose has been given, which may prove poisonous, give an infusion of nut-galls, which renders it inert.

Jalap.—This is an active, but not a very certain purgative; given when the bowels are torpid and loaded, or when there are worms, or when the brain is attacked, as in water in the head. In this last case, calomel is usually added.

The dose to a child under the year is about 2 grains; and to those who are two or three years old, from 5 to 10 grains. When the liver or stomach is deranged, it is apt to disagree, causing vomiting, griping, etc.

It should be combined with ipecacuanha.

No. 204. Powdered jalap.....	30 grs.
Ipecacuanha.....	5 grs.
Calomel.....	5 grs.
White sugar.....	10 grs.
Mix.	

Two to five grains of this every third hour.

Jalap gingerbread for the nursery.

No. 205. Flour.....	1 oz.
Sugar.....	1 oz.
Two eggs.	
Powder of jalap.....	60 grs.
Mix.	

Of this mass, make three biscuits, and divide each into four portions. One of these to be taken twice a day.

Liquor of Potash is useful in cutaneous eruptions, and for acid in the stomach or bowels. Three drops for a child two or three years old is the dose; and it should be well diluted in barley-water, nor should it be taken beyond about three weeks at a time.

The dose may be increased, as the age of the patient increases, up to 12 or 15 drops.

Linseed, for diseases and irritations of the urinary organs. The infusion of linseed is made by pouring a pint of boiling water on 6 drachms of linseed, bruised; 2 drachms of bruised liquorice root. Let the liquid stand for four hours on a hob, and strain through linen or calico.

To render this more pleasant, though not more efficacious, we can add a drachm of lemon-peel, with its rind removed, and a quarter of an ounce of sugar-candy.

A wine-glassful now and then ; it relieves cough very much.

Magnesia is perhaps one of the most valuable remedies we have for children, who are much infested with acidity. The calcined magnesia should be used, because if it meets with acid in the stomach there will be no generation or evolving of carbonic acid gas, as may occur when the carbonate of magnesia is given.

It should be combined with rhubarb.

No. 206. Powdered rhubarb.....	20 grs.
Magnesia.....	40 grs.
Powdered cinnamon.....	10 grs.
Mix.	

Three or four grains of this every third hour, to a child six months old ; from 6 to 10 grains after twelve months.

Manna is a safe, gentle aperient, though it generally requires to be added to something else.

No. 207. Tartarized soda.....	3 drs.
Manna.....	3 drs.
Dill water or cinnamon water.....	2 oz.
Syrup of rhubarb or simple syrup....	$\frac{1}{2}$ oz.

Of this, 2 or three tea-spoonfuls ; but to an infant under the year, 1 tea-spoonful, repeated every three or four hours. For children of four or five years of age, the following lozenges :

Manna Lozenges.

No. 208. Cream of tartar.....	$\frac{1}{2}$ oz.
Manna.....	4 oz.
Water.....	10 oz.

Boil down to a proper consistence, and divide into lozenges, weighing 10 grains each.

Mothers will find it worth their while to make these lozenges.

Manna may be combined with senna, as in the following formula :

No. 209. Infusion of senna.....	1 oz.
Mint-water.....	$\frac{1}{2}$ oz.
Manna.....	2 drs.
Magnesia.....	20 grs.
Tincture of rhubarb.....	1 dr.
Syrup of roses.....	2 drs.
Mix.	

One or two tea-spoonfuls every third or fourth hour, until it acts.

Manna and syrup of roses, mixed in equal quantities, will be readily taken, and will often answer well.

Niter, or Nitrate of Potash, is useful in many disorders of children—in fevers, to lower the pulse and heat of system—in bleeding from internal parts, from the lungs especially.

The following composition has been recommended as a very good remedy for gastric fevers or bowel disorders :

No. 210.	Dry carbonate of soda.....	8 grs.
	Ipecacuanha powdered.....	1 gr.
	Compound powder of ipecacuanha...	2 grs.
	Compound powder of cinnamon.....	6 grs.
	Nitrate of potash.....	10 grs.

Mix, and divide into six powders. One to be given every third hour to a child a year old, in some barley-water or thin gruel.

Inflammatory sore throat, where the little patient is unable to gargle, mix two-thirds of niter with one-third of sugar, and place a little of this upon the back of the child's tongue who is suffering from sore throat, two or three times a day.

Opium is so badly borne by infants and young children, that mothers had better never attempt to give it, under any of its forms. Syrup of poppies, Dalby's carminative, Godfrey's cordial, paregoric elixir, are the ordinary forms under which opium has been given. The tincture of hop must be given instead.

Rhubarb is an useful child's medicine. It combines an astringent and tonic with a purgative property, and it is, therefore, well adapted to the irritable bowels of children. In inflammatory complaints, or where there is excitement, we should not give rhubarb; thus it should not be given in the early stage of dysentery, though it is of great benefit in the later stages. When combined with magnesia, it relieves the griping complaints of children.

For a dose to a child six months old, two grains may be given, with as much calcined magnesia; to a child two years old, five grains may be given in dill water, or mint, or aniseed water. But a late writer says the syrup of rhubarb, with a little dried soda or magnesia added, will be readily taken by young children.

It is most effective when given in powder; but its taste can be best disguised in the form of infusion, to which some cinnamon powder has been added, and also camphor julep, for camphor increases the action. This infusion is made by macerating (letting stand in a gentle heat) for two hours half an ounce of powdered

rhubarb in nine ounces of boiling water, with one scruple of cinnamon; then to strain it through linen or calico.

The dose of the syrup to an infant is from half to a whole tea-spoonful.

Gregory's powder consists of two parts of rhubarb, four parts of calcined magnesia, and one part of ginger, well mixed and rubbed together.

Salts, or Epsom salts, act mildly and quickly. The child should be made to drink pretty freely soon after taking the salts; not too soon, however, lest from over-distension the stomach reject the medicine and drink together. Wait half an hour, and then give drink. The more diluted the salts, the more effectively will they act.

Dose.—To children about three and a half or four years old, a drachm of Epsom salts may be given in water, sweetened with syrup of lemon-peel; or they may be given in the compound infusion of roses, sweetened.

Sarsaparilla.—This is an auxiliary in the treatment of depraved conditions of the system, in eruptions on the skin, and in disorders of the digestion, though many deny that sarsaparilla does much or any good.

Dose.—A tea-spoonful of the fluid extract may be given two or three times a day, in some water, to a child five years old.

Senna.—This is one of the most common aperients in use, and produces a decided though not a violent impression. It seems to remove mucus accumulations from the stomach and bowels, and thus may be useful in worm cases. The best combination is with manna, tartrate of potash, and aniseed or dill water. Pimento water hides the taste best, and tincture of orange-peel will also disguise the flavor.

Or, we may digest a drachm of senna leaves in a sufficient quantity of cold water for a night, and coffee is prepared in the morning with the strained liquor. A purgative is thus obtained devoid of all nauseous taste.

An infusion is made by pouring eight ounces of boiling water over one drachm of senna leaves, and a few prunes digested in it. Of this a table-spoonful or two operates well.

Epsom salts are often wisely added to the senna.

Sulphur has an action over the skin, and over the large and lower bowel (the rectum). It is a laxative, promotes perspiration,

and acts gently. It is given in piles, prolapse or coming down of the lower bowel, in long-standing eruptions of the skin, and it is a popular remedy for rheumatism.

A friend of the author puts some sulphur under the soles of his feet when troubled with the rheumatism, and he speaks with enthusiasm of the good effects.

Dose—is thirty grains to one hundred and twenty to a child six years old; the precipitated sulphur is preferred, and it is to be given in milk, combined with half the quantity of cream of tartar.

Sulphate, or Super-sulphate of Potash, is useful in disorders of the liver and bile ducts, and it is a purgative. It is usually given combined with rhubarb—thirty grains of the sulphate with ten of rhubarb, in any aromatic water.

Scammony is at times required when there is much mucus in the bowels of children, to which they are a good deal exposed. It is apt to gripe and irritate; wherefore it must be finely powdered, and combined with some aromatic. Worms are dislodged by it sooner than by any other drug; but its high price leads to its frequent adulteration.

No. 211. Powdered scammony.....	30 grs.
Prepared chalk.....	15 grs.
Aromatic powder.....	5 grs.
Mix well.	

Two grains to five every three or four hours.

No. 212. Rhubarb.....	} equal parts.
Scammony.....	
Sulphate of potash.....	
Aromatic powder should be added.	

The carbonates of potash or soda are often useful, combined with other remedies; three or four grains for a dose.

Aloes, for the thread-worm, or to relieve the head when threatened, may be given. Liquorice root disguises the taste.

No. 213. Compound decoction of aloes.....	1½ oz.
Liquorice root.....	2 drs.
Wine of aloes.....	2 drs.
Mix.	

One or two tea-spoonfuls twice or thrice daily.

Suppository of Aloes,

to be introduced into the lower bowel when irritated by thread-worms:

- No. 214. Powdered aloes..... $\frac{1}{2}$ oz.
 Common table-salt..... 3 drs.
 Flour 2 drs.
 Honey enough to make a mass.

An useful Purgative Injection,

to help in costiveness, and to prevent the necessity of giving many aperients by the mouth, is the following formula :

- No. 215. Barley water..... 5 oz.
 Common table-salt 3 drs.
 Olive oil..... $\frac{1}{2}$ oz.
 Mix.

To this, if much wind in the bowels be present, add one or two tea-spoonfuls of spirits of turpentine.

CASTOR-OIL BISCUITS.

Take a quarter of a pound of flour, two ounces of moist sugar, a small quantity of mixed spice finely powdered, and, with an ounce and a half of castor-oil, make the whole into the consistency of pie-crust, to which may be added a few currants ; roll out the paste and divide into ten cakes, and bake over a quick oven. Each cake will contain more than a tea-spoonful of oil. By adding molasses and ground ginger, the same may be made into gingerbread nuts. Several families find these cakes useful.

DISEASES OF CHILDREN.

TEETHING.

The evolution of the first set of teeth is a perfectly natural process, but it is occasionally rendered both painful and difficult by errors in the management of the infant ; and then it becomes the most critical period of childhood ; and thus it is we hear that, out of 1,000 children born at the same time, 257, or more than one-fourth, will be dead at the close of the first year ; while of the remaining 743, but 118, or less than one-sixth, will be dead at the close of the second year.

Into the causes of this mortality we need not here enter ; but one very efficient is the process of dentition, which, in some scrofulous and irritable habits, excites fatal convulsions in a certain proportion of cases.

The order of cutting the teeth is this: the two middle teeth, the incisors of the lower jaw, appear first, about the seventh month; the corresponding incisors in the upper jaw follow in about three or four weeks, and then the remaining four incisors in the upper and lower jaws. The two canine teeth then appear, first in the lower jaw, then in the upper. Soon after these, the grinders appear in the same order—one on each side, first on the lower jaw, then on the upper. At the end of from four to six years, four more grinders appear in each jaw; these are permanent, and grow with the increase of the body. At the age of twenty-one, or later, four more teeth appear, called the wisdom teeth; thus, in all, making thirty-two teeth in the adult.

The numbers in the following table show the succession of the teeth; the numbers do not refer to months or years :

Molar Teeth.		Canine.	Incisors.				Canine.	Molars.		
9	5	7	3	2	2	3	7	5	9	
10	6	8	4	1	1	4	8	6	10	Lower Jaw.
										Upper Jaw.

The temporary or deciduous teeth appear, on an average, at the following periods after birth :

	Months.	Months.
The central incisors at about.....		7
Lateral incisors.....	from 8	to 10
Anterior molars.....	" 12	" 13
Canines.....	" 14	" 20
Posterior molars.....	" 18	" 36

PERMANENT TEETH.

	Years.	Years.
The first molar.....	from 6½	to 7
Central incisors.....	" 7	" 8
Lateral incisors.....	" 8	" 9
First bicuspid.....	" 9	" 10
Second bicuspid.....	" 10	" 11
Canines.....	" 12	" 12½
Second molars.....	" 12½	" 14
Third molars.....	" 16	" 30

Many children do not suffer at all during the whole process of teething; others are afflicted with convulsions, heat, and excitement; others with looseness of the bowels; and these last do best. In some, slaving exists for some time, more or less; in others, there are no precursory symptoms at all.

The convulsions are often fatal; but as they proceed from, or depend upon, the delicate vascular and highly-sensitive membrane which surrounds the tooth being put upon the stretch, much may be done by a watchful mother to prevent convulsions and every danger.

Fever also may attend teething; and heated hands, flushed face, offensive urine, and flushing of the cheeks attest the sympathetic irritation which is set up. The gums may become red, swollen, and hot; diarrhea, swelled glands, sore eyes, a croupy cough may, in different cases, prevail.

Pure air, tepid bathing, care as to diet, and free bowels are to be procured if possible. The tepid bath, at 95°, is very soothing.

The child may mumble a hard crust, though, as a little bit of hard crust sometimes gets detached, and slips down the throat, causing cough, it would be better to let the child mumble the coral, ivory, and other contrivances, on sale for that purpose.

The mother or nurse should gently rub the gums where they are swelling.

If the bowels are too loose, four grains of the compound chalk powder, just to restrain within bounds, not to arrest; if they are confined, four or five grains of Gregory's powder, with three or four drops of sal volatile.

Should this treatment fail, then lance the gums well down to the tooth, again and again, if necessary; and no fear need be entertained of the scar from the lancet or sharp knife, or sharp edge of any kind, becoming hard and resisting the forthcoming tooth.

All newly-formed parts, such as scars or cicatrices, are sooner absorbed than the original structure.

This lancing, immediately a convulsive fit is threatened, has been successful many times, pretty nearly uniformly so.

The fever and irritation, wherever they manifest themselves, must be treated on the principles laid down in preceding pages, only adapting the number of leeches, and amount of depletion or lowering, to the degree of fullness in the vessels which may exist.

If the gums ulcerate, a little alum or borax, in honey or syrup, smeared over the ulcer, with an aperient or two, and a cooling diet, will soon cure.

If the jaws are not expanded enough for the permanent teeth, or if the teeth are too large, a well-educated dentist should be consulted; also, if any make their appearance in the wrong place.

SCROFULA.

This peculiarity of constitution demands the utmost care and attention; for while it spares neither age, sex, nor condition, its attacks and progress are often so insidious, that disorder and disease may have fixed their roots in the constitution before alarm is taken.

For instance, scrofulous inflammation is a very slow process in many instances; and if matter is formed, it is formed slowly; and the pus formed is not like the ordinary matter in other inflammations; it is not one fluid; homogeneous is the technical term. It consists of a thin, serous, whey-like fluid, and partly of fragments resembling curd. The ulcers left are indolent, will not readily yield to remedies, nor will they readily heal up.

This temperament is well known by certain marks, viz.: an extreme whiteness and fineness of the skin, fair hair and blue eyes, a soft and rounded form of the body, the cellular tissue of which fills up all lines and muscular or other projections; there is a look of perfect health; yet, though the skin and bodily substance appear firm to the eye, they are soft and flabby to the touch; the countenance, generally full and rounded, conveys an expression of softness; the cheeks often beautifully colored; the teeth white in a remarkable degree; the lips are apt to be swollen, especially the upper; the nostrils swollen, and the skin is easily irritated by what would not cause irritation in a sound person. In some children with this temperament, even mild-scented soaps have sufficed to cause an eruption of pimples.

The intellect in early life is active, vivacious, and cheerful, and the moral and mental faculties are of a pleasant cast; but there is a want of firmness and solidity. Such children are clever, and exceedingly quick in learning any thing they try to conquer; their parents are delighted with them, and wish to incite them to constant intellectual exertion, whereby disease is often roused into action, never again to quit the patient.

Scrofula is also common in those of a very different temperament—the melancholic or bilious. Then the complexion will be dark, the countenance swollen and pasty, the habit indolent, and the functions of the body are performed sluggishly, and perhaps imperfectly; the nervous energy is feeble, the feelings obtuse, and the moral and intellectual powers occupy a low rank.

The late Dr. Thompson tells us that the worst forms of scrofula occur in persons of this temperament.

Scrofula consists, essentially, in the formation and presence in the various tissues of tuberculous matter. It may affect, though with various degrees of frequency, almost every tissue in the body, the susceptibility varying with the age of the individual.

Children most frequently suffer from scrofula in the glands of the neck, in the mucous membranes, and in the mesentery (a membrane by which the bowels are fastened to the spine).

SCROFULA AS IT AFFECTS THE GLANDS OF THE NECK.

These are seldom so affected in children under two years of age, and the period of life most exposed is between the fifth year and puberty.

An eruption on the scalp, or behind the ears, may be complained of; then the glands swell, and feel firm and fleshy to the touch. By degrees the glands become larger and harder, though slowly, parts of them being as firm as cartilage; then a process of softening takes place in particular spots, which, if then examined, would be found to contain a soft, yellowish-white, and cheesy tuberculous matter. Some curdy, yellowish pus or matter is formed, which slowly makes its way to the surface, sometimes through several apertures, when an open scrofulous abscess results.

These glands may attain a large size, continuing hard; and might even be absorbed without matter forming, if the health happened to improve.

An open scrofulous abscess discharges, for a long period, a thin fluid, containing curdy flakes, and now and then small masses of tuberculous matter.

The sore itself is characterized by a thin, overhanging, livid margin, with pale and flabby or indistinct granulations; and it sometimes heals in one part to break out in another.

Scrofula often attacks the ears of children, the outward passage. The membrane is inflamed, progressing slowly; then pustules are formed, with a discharge of unhealthy, badly-smelling matter.

Now, this inflammation may extend into the ear, causing ulceration of the membrane of the drum of the ear, when deafness would result; and it may extend further in toward the brain, causing disease of the brain and death.

Scrofulous discharges from the vagina, of a purulent or mucopurulent character, are not unfrequently met with, and will only yield to those measures which tend to improvement of the general health.

Scrofula does not appear to be the direct product of any peculiar virus, as direct attempts to propagate it by inoculation have been unsuccessfully made by several.

The marks by which we recognize the scrofulous tendency, are all such as denote the preponderance of the white tissues and fluids of the body over the red; that is, of the lymphatic over the arterial and venous systems.

Now, all we know of physiology teaches us "that the strength, vitality, and capability of resisting disease possessed by animals (at least warm-blooded animals), is in a direct ratio with the preponderance of the red tissues and fluids in their bodies over the white; that, in fact, the white tissues have naturally a lower degree of those qualities than the red; and the more they abound in the system, in relation to the others, the less power will there be for resisting morbid conditions."

External causes seem to have a power of exciting scrofula in persons who do not show any of the marks of the scrofulous tendency; and they act by favoring the production of the white over the red tissues—for instance, confinement in damp, unhealthy situations, with diminished supply of light and air. Thus inhabitants of cellars, and of houses without good air, and with very little light, will become scrofulous.

Parrots, monkeys, rabbits, etc., all die of consumption when taken and put into confinement, after constantly living in the open air, and under a brilliant sun.

Peculiarities of structure have a tendency to be communicated from parent to offspring; and we should confidently expect that the deficiency in red tissues, so conspicuous in the scrofulous temperament, would be bequeathed by a strumous father or mother to their child; and we find that it frequently so happens. Fortuitous circumstances may originate scrofula in those not predisposed, and a generation may be passed over without any attack, in consequence of better air, living, and exercise having engendered a healthy predominance of the red tissue over the white.

Scrofula may be attended with a deposit of tuberculous matter; or, again, there may exist scrofula in various parts without any

deposit of tuberculous matter. The seat of this last is the mucous system, and not the cellular, as was long believed. The mucous systems require for the discharge of their functions a large share of red blood, and a high degree of vitality; they will, therefore, suffer soonest, and most severely, from any minus state of the constitution in these particulars.

The preventive treatment of scrofula is very important, and this is to be done by endeavoring to restore the deficiency in the red fluids and tissues, by paying attention to the various items concerned in the management and bringing up of children. To the chapters on *FOOD, CLOTHING*, etc., the reader may turn for directions how to proceed.

There are three points which require to be specially attended to in the prevention of scrofula:

1st. Where a taint of the disease evidently exists in the mother, that the state of her health during the period of pregnancy should be regarded with the most jealous care.

2d. That on the birth of the child, if either parent should have strumous or scrofulous predisposition, preventive means must be resorted to during the early years of life.

3d. In cases where there is no hereditary predisposition, but locality or other external agents appear the source of the disease, these must be obviated.

Females are not sufficiently aware of the influence exercised by their own state of health, during pregnancy, on the offspring they are carrying. Every sensible woman may safely trust to her common sense for the avoidance of errors in diet, clothing, etc., only she must be watchful. Some cautions apposite to this purpose will be found in preceding pages.

When the child is born, and the father only be of a strumous habit, the mother may be permitted to suckle her child; but if the mother be scrofulous, then a wet nurse should be obtained; and a right or wrong choice of a wet nurse may exercise a baneful influence on the whole future life of the child.

About the age of ten or twelve months, the child should be weaned, because protracted lactation tends very strongly to produce a feeble habit of body. The milk, after twelve months, becomes poor and innutritious, giving rise often to flatulence and indigestion.

The food should now consist of cow's milk, with light nutritious

vegetable food and a little broth. Fatty matter in milk is recommended by Dr. Paris. The suet is to be inclosed in a muslin bag, and so simmered with milk; and this affords much nutriment in a little space. This has been compared to goat's milk, but it is more astringent; it has been strongly recommended in atrophy, or scrofulous decay, and was very useful when every other article of diet caused irritation in the bowels. As children have not the temperature so high as that of adult age, and as they do not enjoy the power of generating heat to the same extent, the clothing, therefore, must be warm, and effectually protect against the vicissitudes of the weather. Exercise in the open air; living in well-aired, spacious apartments; tepid baths or cool baths may also be put in requisition.

As the child grows up, and particularly if the intellect is precocious, parents must be warned against allowing such children to work too much with the head. Disease is soon set up of an insidious character; and the child is attacked with tubercular inflammation of the brain, which too often bids defiance to all remedies. I could relate many instances of the fatal results from neglecting this point of treatment.

Childhood is the period of *growth*, and the full exertion of the intellect should be kept in the background; for any undue exertion of the mind can only be carried on at the expense of the bodily powers; and it has been justly observed that "eventually the hopes derived from precocious intellect are disappointed, and that state of intellect which should only have been the accompaniment of after and more mature years, fades into weakness and irresolution as manhood advances—that very period of life when the independence of intellect is required. A child with a scrofulous tendency should learn its lessons in the fields, and not be bound down to books in the crowded atmosphere of a school-room." Boys are better treated than girls, for they have their hours of exercise and free enjoyment; but female education is fraught with conditions the most obnoxious to the strumous, in the shape of ill-ventilated and confined rooms, of the use of stays, bands, and strings, and in a system of drilling and exhausting attention, either to mental or bodily qualifications. One would imagine that all parents would not need any words of warning, yet the physician is continually meeting with lamentable instances arising from neglect of these sanitary rules.

In those children who have imperfect appetites and digestion, and whose bodily powers are weak, I have often prevented mischief by recommending the use of some of the chalybeate waters, or of a syrup composed of the citrate of iron, two grains to the ounce of syrup, and a tea-spoonful given, twice a day, in some water; or, if the syrup disagree, a little tincture of orange-peel, about two drachms to three-quarters of an ounce of water, and two grains of the citrate of iron, in the same doses, have done great good, a gentle aperient being occasionally given. The tone of the whole body has thus been strengthened, and all deposits of a morbid nature prevented.

The following is an instance of the prejudicial effects of cold at school. A young lady, aged fifteen, had just begun her periods, and was rapidly developing into womanhood, with every appearance of very good health. She was sent to a finishing school, and in about three months I was sent for, and found her in a state of rapid consumption, which bid defiance to all treatment, so general was the disposition of tuberculous matter throughout the lungs. The only cause I could discover for this fatal change, was found in the fact that every morning, during the winter season, the sufferer had to practice at the piano-forte, from seven to eight o'clock, in a large, cold room, without fire. The poor girl felt, she said, almost frozen every morning, *and never recovered any warmth during the whole day.* Thus the blood, driven from the surface of the body, caused congestion and slow circulation in the lungs; and a general deposit or infiltration of tuberculous matter took place.

Another striking exemplification of the danger arising from neglect of proper warm clothing, and the consequent imperfect performance of the very important cutaneous functions, was related to me by a medical friend, who, many years ago, accepted an appointment as family physician to an English lady of rank, who was married to a Russian nobleman. After residing some time at St. Petersburg, he found the lady had some fixed opinions about the physical education of children, and that she was firmly persuaded that bringing them up on the hardening system, as it used to be called, was the only way to make them grow in vigor. The author's friend, who was a clever and well-educated physician, explained to her that the system she so much affected required modifications, according to the peculiarities of different constitutions. Some will bear, and bear it well, too, an amount of cold that

would soon kill others. Now this lady had a daughter, about thirteen or fourteen years of age, in pretty good health, but with the fair skin and other marks of scrofula, whom the mother would always send out into the air with a very insufficient amount of protective clothing, notwithstanding the doctor's earnest and then somewhat angry remonstrances, who, at last, finding he was not allowed to direct all matters pertaining to health, resigned his appointment. In one short year the poor girl was hardened into her grave.

The danger from scrofula generally passes away after the age of puberty, or about twenty-one, unless in the case of consumption.

Treatment.—If we remember the causes, both predisposing and exciting, of this malady, we shall have no difficulty in making out what we are to aim at in our attempts at cure.

To improve the general health is the first point, and this must be done in every possible way; and to promote the dispersion of local tumors is the second.

A nutritious diet must be secured; but great attention must be paid as to the quantity and quality of food admitted into the stomach of those of scrofulous habit, who are ready to suffer disease more quickly than others. Whenever strumous children are suffering from bowel irritation, as in atrophy, indigestion, etc., animal food had better be withdrawn for awhile, and a farinaceous one substituted, or else a diet adopted which is modified between the two.

In the article INDIGESTION, I have explained that the food is digested in proportion to the quantity of gastric juice secreted, and that the quantity of this secretion depends on the want in the system for food and support. Give more than that proportion of food demanded by nature, and irritation arises, to end in disease, perhaps.

Warm clothing is quite indispensable; and during the cold months there should always be sufficient blankets to the bed, to prevent any feeling of coldness. It must, however, be borne in mind that we must not make the child wear so many clothes as will keep the skin in a strongly perspiring state, for that would be to exhaust the strength. The skin should be maintained in just such a perspirable state as will keep it soft and pliant to the touch. Flannel or woven cotton may be worn.

Exercise, in a dry, bracing air, must be regularly taken. Bath-

ing in sea-water, and at the seaside, is very useful. Some medical men object to the seaside in cases of consumption; but it has been explained why and in what cases the sea bathing and sea air may disagree.

My practice is to order all who consult me to stand or sit in a tub of water, as hot as can be borne comfortably; then, with a flannel, and the best soft soap—scented, if it be preferred—to have the whole body first sluiced with the water, then soaped down from nape of neck to sole of the foot, then wiped dry, and, finally, a bucketful of tepid water, or water nearly cold, may be thrown over and down the body and limbs, which are to be wiped dry before getting into bed. This may be repeated two or three times a week; and such is the comfort derived from the practice, so speedily and sensibly beneficial are the effects, that no recommendations are needed to continue the practice.

Every pore of the skin is opened, and all adherent scales or dirt removed; and there is little doubt of such ablutions having high protecting power against disease.

For some years I used the hot water and soap, but latterly I find the final bucket of cool or cold water a very powerful tonic; and so tranquilizing is the influence that the following night is passed in one untroubled sleep.

The iodine baths have been strongly recommended, and they certainly do determine strongly to the skin, hands, and feet, etc.

Lugol's formula for iodine baths to children between four and seven years of age is this:

No. 216.	Water.....	36 quarts.
	Iodine.....	30 to 36 troy grs.
	Hydriodate of potash.....	60 to 72 troy grs.

Strumous children often complain bitterly of cold feet; and many a school-girl has been prevented from getting any sleep by the coldness of her feet, or, it may be, by chilblains.

Here the iodine pediluvium is of service. A solution of iodine should be kept ready to add to the water.

Iodine Foot-bath Solution.

No. 217.	Purified iodine.....	60	grs.
	Hydriodate of potash.....	120	grs.
	Alcohol.....	$\frac{1}{2}$	oz.
	Distilled water.....	$3\frac{1}{2}$	oz.
	Mix.		

A table-spoonful of this solution to enough hot water forms a foot bath ; to be used every night or alternate night.

In some cases, I found there were complaints of the bath leaving behind it a troublesome itching, to remove which a couple of grains of cyanuret of potash may be added to each bath.

The shower bath, warm or tepid at first, may be found beneficial.

Aperients occasionally must not be forgotten ; gray powder, with powdered rhubarb, with one or two tea-spoonfuls of castor-oil, next morning, will suffice.

If indigestion accompany, with acid, heartburn, etc., the carbonates of magnesia, potash, or of soda may be given, two or three times a day, in some bitter infusion, so long as the state of indigestion continues.

Tonics are very beneficial, and those derived from iron are the most desirable. The ammonio-citrate, or the citrate, as it is commonly called, is the best for children, both because it is less disagreeable to take than any other of the chalybeates, and because alkaline carbonates may be combined with it, if necessary.

It may be taken in a state of effervescence, by dissolving ten grains of the sulphate of iron in some water—a wine-glassful ; then dissolving in some water, in another glass, ten grains of the sesquicarbonate of soda. Syrup of orange-peel, etc., may be added to taste. On mixing the two, we shall obtain a solution of about four grains of carbonate of iron, two and a half grains of sulphate of soda, and five grains of sesquicarbonate of soda.

The chalybeate waters are, perhaps, the best vehicles for this kind of tonic ; for the metal is so finely divided, and the quantity taken is so small, that no irritation can possibly, or ever does, ensue ; provided the proper case has been selected.

A gaseous chalybeate water can be thus made :

No. 218. Bicarbonate of soda.....	98 parts or grs.
Tartaric acid.....	116 grs.
Sulphate of iron.....	3 grs.
White sugar.....	280 parts or grs.

Mix well by rubbing, and keep the resulting powder quite dry, in a well-stoppered bottle. This quantity will make a quart.

In some cases the iron and quinine ought to be combined ; and there are preparations sold of the two rubbed in together.

In enlarged or hardened glands, the iron should be combined with iodine, and the syrup of iodide of iron should be perseveringly

given, beginning always with very small doses, until the stomach can well bear larger ones.

The cod-liver oil is one of the most valuable medicines in scrofula we can possibly give; and though it acts rather as an agent of nutrition than as a remedy, still it certainly does a vast amount of good. The iodine in it contributes to the beneficial effect.

The iodide of potash, in bitter infusion or with sarsaparilla, has been much lauded, but I do not often give it; and neither this iodide nor iodine should ever be given under certain circumstances; namely, when there is a tendency to too profuse periods, or when there is an erysipelatous state of the skin; and inflammations of the lungs, or irritation of the stomach or bowels, or diarrhea also forbid its use.

When it is doing good, the almost immediate effects are an improved appetite, a more healthy color of the skin, which are often followed by decrease of swelling and absorption of the disease of the glands. And we shall know when to leave off the iodine—when a feverish state suddenly appears, a headache, loss of appetite, etc.; for if we continue the iodine, a quick pulse, palpitations, dry and frequent cough, night-watchings, rapid thinning, loss of strength, trembling, etc., will give undoubted evidence of the mischief which the iodine is effecting in the system.

ENLARGED GLANDS.

Besides the above general measures of treatment, the local application are of importance. The best application is, to paint once or twice a day, by means of a camel-hair brush, the enlarged glands, with a solution of pure iodine in alcohol—ten to thirty grains to an ounce of alcohol.

If the glands inflame more under this application, discontinue, and apply cold or warm poultices till the redness disappears; then paint again.

Sometimes an ointment of iodide of lead agrees better, sixty grains to an ounce of lard. The ointment of zinc is very useful at times.

If passages called sinuses form, inject a weak solution of iodine, five grains to an ounce of alcohol, and apply pressure above the passage. These sinuses are often intractable.

SCROFULOUS EAR.

Cleanliness is what is here chiefly wanted; and we may relieve the irritation in the auditory passage by exciting counter-irritation behind the ear. This is done by placing a piece of woollen thread, smeared with blistering ointment, in the angle between the ear and skin of the head, or by an eruption caused by the tartar emetic ointment.

RICKETS—RACHITIS

commonly appears about the first dentition, or it then begins to show its first symptoms, when the child has to try and support the weight of its body upon its limbs.

Symptoms.—The general health first shows signs of derangement; the child becomes languid, feverish, the skin dry and rough, the flesh soft and flabby; countenance pale; appetite uncertain, and depraved sometimes; the digestion is impaired, the bowels irregular, the stools and urine unhealthy-looking, the abdomen or belly jutting forward, though this last symptom may depend on the bones of the spine, in the loins, jutting forward too much, in which case the hollow of the back will be unnaturally concave. With all these there is more or less of fever, not unlike the remittent fever.

After a time the head begins to enlarge, and the openings in the head of the infant do not close at the proper time.

The ends of the long bones at the wrists and ankles swell into knobs, which appear all the larger from the shrunken state of the limbs. The bones become soft and incapable of supporting the weight they should do; the legs bend, the chest narrows, and the breast-bone projects forward.

The hip-bones participate in the deformity; and the teeth come forward very slowly, and suffer speedy decay.

The impression is general that rickety children are of precocious intellect, but this there is reason to doubt.

This disease depends upon a deficiency in the earthy matter of the bones. Dr. John Davy found that 100 parts of the tibia (large bone of the leg) of a healthy subject of fifteen yielded 46.4 of animal matter, and 53.6 of earthy, while the same quantity of the dry tibia of a rickety child contained 74 parts of animal, and 26 of earthy substance.

Rickety persons are seldom long-lived, and many suppose that phthisis is brought on; but the chest symptoms, of great expectoration and dyspnoea (difficulty of breathing), are occasioned by the deformity of the chest, which at length impedes the passage of the blood from the right to the left side of the heart.

The causes are the same as those which favor the induction of scrofula. Any thing which prevents healthy nutrition may bring on rickets; so, if the causes can be removed, and the disease is not too far advanced, we may hope to cure or to arrest the progress of rickets.

The greatest dangers arise from the great deformity of the chest, and from any fevers or exhausting diseases attacking the rickety child, which is all the less able to bear the strain of the added disease.

Treatment.—This is comprised in that of SCROFULA; and all we have to add here is, as to managing the child's positions; for any undue pressure upon any part, and especially the chest, must be avoided; the bones are so flexible that pressure carelessly continued in the same situation, will be very likely to alter their shape.

Dupuytren used to place the child with a deformed chest from rickets with its back against a flat, resisting body; and then pressing with the extended palm of the hand upon the chest-bone, so as to flatten the chest from before backward, and increase the convexity of the ribs. By frequent daily repetition of this pressure, more may be done to correct deformity than would be imagined; and the nurse could do it, only force sufficient to cause pain should never be used.

All instruments for straightening the spine, etc., are here useless, and, indeed, they are prejudicial, by impeding or preventing the muscles from acting. Instruments, too, must bear upon some points for support. Now, in rickets the hips will give way all the sooner for any extra pressure being put upon them.

Some padded splints may here and there be applied, but even these will require great caution and judgment.

In the case of Madam Supiot, it is related that she could, and often did, place her legs at her sides, and on parallel lines with her body.

ATROPHY—MESENTERIC DECLINE.

This may arise from disease of the mucous membrane of the bowels, either irritation or inflammation, or it may arise independently in a child of highly scrofulous habit. The mesenteric glands, which are scarcely perceptible at birth, undergo gradual development until about the period of dentition, when, in common with other parts of the glandular system, they begin actively to enlarge; and, accordingly, we find that disease of the mesenteric gland makes its appearance about this period. Infants are seldom affected before the eighth month; but from that time to the eighth or tenth year the disease is liable to occur; most frequently from the third to the sixth year, or about the seventh. The glands of the mesentery are more subject than any others to tubercular disease. (See SECRECTIONS.)

These glands may first begin to swell from irritation set up in the bowel, and they may remain in an indolent state for some time, being in size not larger than a pea; but they may increase in quantity until they arrive at considerable size, resembling a heap of peeled chestnuts. They become soft, and contain a soft, white, curd-like matter; and this matter is sometimes found in considerable quantity, not only in the gland, but around it, or within the layers of the membrane.

Symptoms.—Progressive loss of flesh unto extreme emaciation may be said to be the chief feature of this disease. This wasting is not invariably present, for tubercles have been found in the mesentery where there had been no wasting; still, wasting is rarely absent; and it has been attributed to a failure of nutrition, caused by actual obstruction to the passage of the chyle through the glands; this is, however, an error, for the glands have not been found impervious to injections after death; nor would the patient last so long as he does if obstruction were the cause acting. No, the sufferer is generally cut off, rather, from some acute attack, or from hectic fever; for so long as the glands remain indolent the emaciation does not become remarkable; but when they soften, and begin to suppurate, hectic fever sets in, and emaciation rapidly ensues. The digestive organs are also in a state of irritation, and digestion is much interfered with.

The wasting in this disease is regular and slow; that from bowel complaints is rapid and variable.

The symptoms of disorder of the mucous membrane of the bowels so much resemble and are mixed up with those of atrophy, that a distinction can not well be set up. The only unequivocal evidence of this atrophy, is the feeling the glandular masses in the abdomen. Still, there is a combination of symptoms which will indicate, with some probability, what is going on in the abdomen, and whether the morbid state is one of irritation of the mucous membrane or one proceeding from this tuberculous or scrofulous state of the mesenteric glands; it matters not as to treatment, for what will suit the one will also suit the other.

These symptoms may be divided into three periods or stages. First, the incipient stage, or that in which the enlargement of the glands is present, but has not made itself manifest by disturbing the general health, or deranging the digestive organs in any marked manner; second, a stage of further advancement, when the glands of the mesentery have become perceptibly enlarged, and the derangement of the digestive organs decidedly marked. This is the period at which the stools are observed to assume the white color, which they so frequently exhibit in this disease, and wherein glands in other parts, particularly the neck, are found enlarged. In the third stage, the mesenteric glands become irritated and suppurate; inflammatory affections of the mucous membrane lining the bowels are excited; hectic fever sets in, and colliquative sweats or diarrhea, sooner or later, carry off the patient.

The first stage begins insidiously; the digestion is disturbed; signs of irritation of the bowels are observed, recovery from which is slow; they recur on slight excitement; the belly remains perhaps full and hard, and the flesh wastes away, notwithstanding an appetite probably voracious or fanciful. We should now take alarm, and suspect that disease is set up in the mesenteric glands.

If we can feel the enlarged glands, we are *made* certain.

The second stage is better marked. The patient should be examined while fasting, and we may detect the enlarged and hardened glands about the middle of the abdomen; and pressure on them often gives some pain. If the masses felt proceeded from hardened feculent matter, no pain is caused by pressure; and, moreover, these feculent masses are felt more to the side, in the course of the large bowels; nor does the taking of food, or an evacuation, excite pain, or the latter relieve the uneasiness, as either does when a feculent collection alone is present. The un-

easiness or pain in mesenteric disease is increased by running, leaping, hiccup; also by the upright position or bending of the back; the pain occurs, too, about the same hour of the day, lasts long; or, if absent for a few days, recurs with severity. The appetite is variable, sometimes voracious, and acid or indigestible food is fancied; emaciation proceeds, although much food be consumed; the belly becomes swollen and hard. We can distinguish that these symptoms do not proceed from any irritation in the stomach, by finding that stimulating articles of food do not aggravate them.

And now white, chalky-looking stools are observed, which have been assigned as the characteristic signs of the second stage. These white stools are the exponents of irritation in the mucous membrane of the bowels, and do not depend on the présence of chyle, which has been prevented passing through the lacteal vessels, nor on calcareous matter passing from the bowels, though they look almost like pieces of mortar.

Worms are not unfrequently present, and, when voided, they are looked upon as causes of the disorder, but they are only accidental complications.

In this disease, the accompanying fever may present itself under one of two aspects—under that of remittent fever, and that of hectic. If the irritation in the mucous membrane predominates largely over the tubercular deposit and the tubercular tendency, the fever will be of the remittent character or type, and abdominal inflammation may terminate life; if the reverse, then hectic fever is the accompaniment, and the sufferer dies from exhaustion.

In the third and last stage, the diseased glands have formed matter, which matter can often be detected in the discharges from the bowels on accurate examination. The peritonæum (membrane lining the bowels) becomes inflamed, and fluid is poured out within the belly, or inflammation and ulceration of the bowels themselves take place. Constant diarrhea attends, and helps to rapidly exhaust the patient, together with the cough which so often declares that consumption is raging at the same time in the chest.

Should any enlargement of the cervical or other superficial glands prevail, we may, by observing their state, give a good guess as to the state of the glands within the abdomen; if those under the skin in the neck or groins are softening, it is likely the mesenteric are undergoing, or are about to undergo, a similar change.

Treatment.—In this alarming disease, we must try hard to arrest

the mischief while in its first stage ; if it reaches the second, our probability of witnessing a recovery grows less and less, until, in the third stage, no hope at all ought to be given or entertained.

The treatment of the early stage is that adapted to remove irritation and inflammation. Local depletion ; a very carefully-regulated diet, fomentations and warm baths, stimulating embrocations or liniments. If the bowels are confined, which they may be at first, then a little rhubarb with sulphate of potash should be given ; but in the more frequent case of diarrhea, we may give gray powder (mercury with chalk), one grain, with one, two, three, or four grains of compound chalk powder with opium, two or three times a day ; and the diet should consist of farinaceous food chiefly, so long as the local irritation seems to continue ; but as the signs of local irritation and of fever give way, the diet must be more nutritious, and animal food allowed.

If the looseness is excessive, the chalk mixture of the Pharmacopœia should be given, with or without infusion of catechu, equal parts ; but since the diarrhea depends rather on irritation of the mucous membrane than on any other cause, we shall stop the one by removing or alleviating the other.

Stimulating embrocations and liniments are of great service usually. Spirits of turpentine, made warm, by putting some into a cup placed in boiling water, is a powerful reddener of the skin ; so are linen compresses wet with the turpentine. They are to be left on the abdomen until a sense of tingling arises.

Another remedy is the croton-oil embrocation—thirty drops of the oil to an ounce of soap liniment—two tea-spoonfuls rubbed gently night and morning, until redness and angry-looking pimples burst forth. Or this :

No. 219. Liquor of ammonia..... 2 drachms.
Opodeldoc..... 1 oz.
Mix.

Or the tartar emetic ointment, consisting of tartar emetic sixty grains to one ounce of lard, or a liniment of soap liniment and tartar emetic in similar proportions.

For internal medicines, either of the following, to a child eight to twelve years old. If there is no diarrhea, this may be given.

No. 220. Infusion of calumba..... 6 oz.
Bicarbonate of potash 60 grs. or 1 dr.
Medicinal hydrocyanic acid..... 6 drops.
Mix. One-sixth part three times daily.

If there is diarrhea—

No. 221. Compound chalk powder.....	2½ drachms.
Tincture of opium.....	20 drops.
Infusion of calumba.....	8 oz.
Mix.	

Two table-spoonfuls, two or three times a day.

But of all remedies, during the first stage, and, indeed, during the three, the cod-liver oil is most to be preferred; the only objection is, that the stomach is often too irritable to bear it, and it is sometimes rejected by vomiting, or else there is a taste of the oil left in the mouth for hours afterward, which children can not easily bear. We may sometimes obviate this by giving, just after the oil, or before it, about the third or fourth of a drop of the medicinal hydrocyanic acid, in some distilled water.

The dose of the oil should be a tea-spoonful to a child of from eight to twelve years of age; and it must be cautiously increased.

If, however, the oil can not be borne in this way, we should rub it into the abdomen, two drachms to half an ounce, mixed with soap liniment, night and morning, taking care to prevent the smell from affecting the child, as much as possible. This oil serves both as nutriment and as a check upon the emaciation, while it possesses a tonic property, and exercises some influence as an absorbent on the hardened glands.

The treatment, then, is comprised in warm baths and very un-irritating diet, while fever, local pain, swelling, and tenderness exist. When this state has been subdued, then tonics and a more animalized diet, while, in all the forms, counter-irritation must be steadily maintained.

DISEASE OF THE BRAIN, AND CONVULSIONS IN CHILDREN.

Inflammation of the brain in children of a scrofulous habit often depends on a deposit of scrofulous or tubercular matter in certain parts of it, and, together with convulsions, cuts short the lives of many infants and children. It may also depend on simple inflammation of the brain; that is to say, of inflammation unconnected with scrofulous action.

In the first stage the symptoms are premonitory; there is general febrile disturbance; the child's manners are altered, its spirits variable; there is an appearance of heaviness, giddiness, dizziness,

headache; appetite bad or variable; thirst considerable. The child seems to halt in its gait.

The child vomits—sometimes after food only; at others, when the stomach is empty, when some greenish phlegm is brought up. The attacks of vomiting occur two or three times a day. The child's head seems to grow heavier; headache, and often severe. The bowels are generally constipated from the first, and the scanty discharges are pale or mud-colored, very offensive, and seem to be deficient in bile. The abdomen is seldom full, though there may be pain or tenderness. The tongue, usually, is not dry; rather red at its tip and edges, with a white fur on the center, a yellowish coating at the root.

The skin is harsh and dry; the nostrils are dry; pulse quick, but seldom exceeding 120 in children of four years old and upward; nor is it full, but often unequal. Drowsiness, yet restless; grinds its teeth during sleep; lies with its eyes partially open; often wakes or starts up in alarm without any cause.

Light is badly borne.

Now, this precursory stage may last for four or five days, after which the second stage may be considered to have commenced. Here we may recognize the disorder, though much of the hope of recovery must be given up. The face shows anxiety and suffering; the child wishes to lie quiet, and not be disturbed; there are no intervals of cheerfulness; the eyes are kept closed, eyebrows knit, as if the child strove to shut out the light from the too sensitive eye; skin continues dry, face flushed, head hot. The replies to questions are very short, generally rational; much irritability; drowsiness increases. Sometimes a short, sharp, lamentable cry is heard, alternating with a low moan. In other cases, children scream out, "My head! my head!"

As night approaches, the symptoms increase in intensity, and the quiet state of the day is changed at night for an excited state, and violent complaints are made about the head's suffering. Delirium may now appear. The pulse quickens; may become irregular or diminished in power.

The eyes are sometimes kept so firmly closed that we can hardly get a peep at the pupils. Usually they are not much affected; but sometimes one is more dilated, and acts more sluggishly than the other. At times squinting exists, at least in one eye.

Vomiting seldom continues beyond the commencement of this

stage; but there is no more desire for food or drink than before the cessation of vomiting.

The bowels become more and more confined, and so shrunken that such a shrunken form was considered characteristic of hydrocephalus. The evacuations continue unnatural throughout.

The third stage commences by a deepening of the state of drowsiness, and this drowsiness becomes a stupor, from which it is impossible to awake or arouse the child.

An attack of convulsions sometimes precedes this stupor; and they affect, in most cases, one side more than the other, leaving behind them one side more or less palsied, or the limbs stiff and contracted. The child is continually moving the other side, (the one not palsied,) carrying the hand to the head, and bending and stretching out the leg.

The child now lies in a state of complete insensibility, one leg stretched out, the other drawn up to the body, and picking its lips. The head is flushed, and usually remains permanently hot; the skin is dry, though perspirations may break out; the pulse becomes a mere thread, and too rapid to count; squinting is observed, but the light no longer offends the now insensible eyes; the eyelids are open, and the eyes turned upward; they roll; the pupils are fixed and glassy, the whites of the eyes bloodshot; and the back part of the head is kept boring into the pillow, and, ere long, a fit of convulsions terminates the suffering.

The symptoms run this course in many cases, but they may vary. All attacks are usually preceded by signs of impaired general health—sometimes by cough and a threatening of the chest, until vomiting, convulsions, stupor, and coma point out where the mischief is going on.

I will divide this disease into four stages.

1st. That of turgescence.—Dry skin, hands to head, pulse weak, gait tottering. This stage lasts often fourteen days.

2d. Inflammatory period.—The signs of inflammation of the brain; lasts two to six days.

3d. Period of effusion.—Insensibility in every shape; picking of nose, kicking of bedclothes; emaciation advances, and complete coma is established; lasts from ten to thirty days.

4th. Stage of palsy.—Convulsions; then palsy, generally of the right side, with cramp; drawing the head backward, pupils dilated, stools passed involuntarily, etc.

Worm fever may be confounded with this disease; the differences are as follows:

DISEASE OF THE BRAIN

seldom lasts less than thirteen or more than thirty days; has stages; if not cured in first or second day, always fatal.

No distinct remissions; is never epidemic.

In second stage, has violent pain in the head.

Appetite in first stage is lost; costiveness; urine scanty—at first milk-white, then yellow, with sediment.

The pulse in the first stage is almost natural; in the second and third, preternaturally slow; in the last only, quick.

Skin is dry, until effusion occurs.

Walk unsteady and uplifted.

The sight over-sensitive in the first stage, dim in the second, and blind in the third.

Vomiting invariable in the second stage.

The head is hotter than other parts.

Emaciation; belly falls in; no flatus.

Palsy, cramp of spine, general convulsions.

Near the end, a hectic flush, with alternating paleness; and tips of fingers red; a peculiar eruption about the mouth and other parts.

Countenance expresses suffering.

THE WORM FEVER

has no stages; seldom terminates before the twenty-first day—often not till the fortieth—and may be cured at any period of the disease.

Has commonly remissions, and is sometimes, though not commonly, epidemic.

The pain is dull, and exists at same time in the belly, but dull and not distinct there.

A greedy appetite; large stools are often passed, and much colorless urine.

In worm fever, pulse is always quick.

Perspiration after eating or drinking, with fever signs.

Walk only slow.

Not so in worm fever; there is no blindness; the nostrils are moist.

Vomiting is accidental; when worms get into stomach, peculiar foul smell of the vomited matter.

The belly is hotter than other parts.

No wasting; belly does not shrink, and there is wind in the bowels.

Convulsions without palsy.

Not so in worm fever; and if there is any eruption, it is only a miliary one, which is an usual accompaniment of gastric disorders.

Not so in worm fever.

Convulsions proceed from some affection of the spinal marrow, and they may be excited by causes susceptible of removal; still, they accompany, as we have seen, the foregoing very fatal disease. We should take alarm when we see the thumbs drawn into the palms of the hands, either habitually or during sleep; when there is not only twitching of the angles of the mouth, but of the face and limbs; when there is sudden starting from sleep, the face flushed or livid, the eyes turning up under the upper eyelids, the pupils dilating, the countenance betrays anxiety or terror, and when the child utters a cry, or shrieks occasionally.

These signs indicate that nerves are involved which belong to the brain, and not to the spinal marrow.

To add to the difficulties of this distressing disease, we not unfrequently meet with deceitful lulls or remission of violence in the symptoms, which give great hope to the anxious parent, who begins to fancy recovery almost secured; and even the medical man has been sometimes induced to give and entertain a hope which the result disappoints, causing only the greater distress to anxious relations.

We must be on our guard against mistaking for this another disease of the head, which resembles in many of its symptoms this inflammatory one just described; and it is the more necessary to avoid any mistake, because the treatment of the two is very different, and what would be beneficial in the one would cause death in the other.

In inflammation of the brain there is an inflamed state of the brain, accompanied by increased action of the blood-vessels. In this disease there is a want of blood, or a diminished supply of the red blood; and thus we find that exhaustion of the nervous power may produce symptoms very much resembling those proceeding from a reverse condition; and defect of pressure on the brain causes symptoms much resembling those proceeding from excessive pressure.

If a human being were to bleed to death, as in uterine hemorrhage, we see these persons become delirious, convulsed, and then insensible, with a wide and fixed pupil, and these are the signs of a reverse state, how are we to distinguish?

This disease has been called spurious hydrocephalus, or water in the head.

There is heaviness of the head, and drowsiness; the patients

were from a few months to two or three years old; they were of small size, or else had been badly nursed, badly fed, or been weakened by some exhausting disease. The physician finds the child lying on its nurse's lap, unable or unwilling to raise its head, half asleep, one moment opening its eyes, the next closing them again, with a remarkable expression of languor. The tongue is slightly white; *the skin not hot*; at times the nurse remarks that it is colder than natural; in some instances there is an occasional transient flush. In most instances there had been leeches applied, purgatives given, and all the usual measures of treating inflammation of the brain had been in requisition, not only without benefit, but with aggravation of all the symptoms.

The distinctive characters of this spurious form of water in the head are, a pale, cool cheek; a half-shut, regardless eye; an insensible pupil, an interrupted, sighing respiration; and our judgment may be aided by the history of the case, by learning what has preceded in the shape of exhaustion, producing causes, bad food, weaning, diarrhea, etc. What adds much to the difficulty in discriminating, is derived from the feeble attempts at reaction which are set up; then great care is required.

We should pay particular attention to one circumstance, which some declare to be characteristic, and that is, as to the state of the fontanelles.

The fontanelles are certain portions of the newly-born child's head which at birth are not covered with bone, but with cartilaginous membranes. Every nurse knows these softer spots. It is by examining the fontanelles in young children that we can discriminate between a state of exhaustion and one of congestion, between too much and too little pressure, between fullness and comparative emptiness.

If we find the surface of the unclosed fontanelle convex and prominent, the symptoms proceed from fullness and inflammation; if the surface is concave and depressed, then there are emptiness of the vessels, and want of support to the brain. In the former case, leeching and depletion must be used, and they will do good; in the latter, we must give ammonia or brandy, and support the powers, avoiding evacuants and depletion of all kinds.

Since the time when the existence and proper treatment of this spurious hydrocephalus was established, similar principles have been applied to other diseases, and many a patient, who might have

been leeches and purged and low-dieted out of life, has been saved; and it is now well known to the practical man that in many cases, signs of excitement, it may be of great excitement, may exist, which will admit of and require a treatment which might appear to be totally inert, because they are cœexistent with a want of power in the constitution, and of strength to withstand the assault of the disease, and the effects of an exhausting or depleting system of treatment.

The treatment of this spurious hydrocephalus is, in giving to a child, about a year old, eight or ten minims of the aromatic spirit of ammonia, in a little water, every four hours, and in ordering asses' milk, from a pint to a quart, in the twenty-four hours. All exhausting discharges must be restrained, and all causes of debility removed. If there is diarrhea, give a little compound chalk powder (see DIARRHEA). The child must be kept in a recumbent position; admit free air, but keep the child's body and limbs warm with flannel.

Instead of the ammonia, from five to ten drops of brandy may be given, in arrowroot, every four hours.

Treatment of Disease of the Brain.—This is an inflammation, and the only means of safety lie in its complete removal; but we must bear in mind that it is an inflammation in scrofulous children, and that there cœexists a want of power and strength, such as has just been alluded to.

Blood used to be taken away by the lancet, even to fainting, once or twice; but some of the most judicious practitioners now rely upon leeches, and think they produce an effect tantamount to venesection. They should be applied rather to the crown of the head than to the temples, where they dangle about the eyes to the terror of the child; or than behind the ears, where they are liable to be rubbed off, as the child's head rolls about from side to side. The number of leeches to be applied must depend on the age of the child, on the violence of the symptoms, and on the greater or less apparent strength of its constitution. Assuming that one leech will, on an average, cause the discharge of one ounce of blood, we may apply three of them to a child six months old; that is, if the symptoms are violent. If fainting occur, the flow of blood must be stopped. A full bleeding for a child five or six years old is six ounces; but the measure and test of salutary blood-letting may be seen in the effect produced at the time. The

first bleeding, whether by leeches or lancet, should produce a manifest and decided impression. The force of the early disease is more surely and safely thus broken than when by bleeding in driblets.

If the pulse continue equally high, the pain equally distressing, the fever as great, as they were before the application of the leeches, and the child's strength does not seem materially reduced, again apply leeches; but as soon as general convulsions, or the state of coma occur, taking away more blood is useless and pernicious.

Purgatives should form our sheet-anchor, whether preceded and accompanied or not by drawing of blood. They correct depraved secretions, they clear the bowels of all irritating contents, and they seem to derive from, that is, lessen, the load on the brain. The purgative should consist of calomel and jalap, or of calomel and scammony; and senna and salts must be given to secure their operation.

Purgatives are very effective agents in combating inflammation of the brain, whether in the child or the grown-up person, and no other means produce so decided a relief as purgatives.

The calomel and jalap or scammony, unfortunately, are rejected sometimes from the stomach; then a large clyster may help materially, both in settling the stomach and in procuring stools. A drachm or two of magnesia, saturated with lemon-juice, every two or three hours, has quieted the irritable stomach and produced discharges. The purgatives are to be continued for several days. This disease of the brain seems to cause a torpor of the bowels, so that it is often very difficult to procure evacuations from them. The late Dr. Gregory gave one child 140 grains of calomel in five days; yet the bowels were not relieved till the patient had taken thirty grains, and a second dose of 35 grains of jalap. In another child, twenty-eight months old, 350 grains of calomel were given in nine days (nearly 40 grains a day); and in six of these days, 136 grains of jalap (more than 20 grains a day). The effects were a gentle purgation from the jalap, none from the previous calomel, and but slight salivation. The child recovered after having been nearly in a comatose state.

Of course we must try small doses first.

Cold applied to the head is especially useful when there is much heat of head, and after the bowels have been freely opened. A

linen rag, wet with cold water, or spirit and water, must be put and renewed as often as it becomes hot, or water may be allowed to drop continually upon the heated head; and the dripping stream should be continued until the head no longer recovers its high temperature upon intermitting the dropping.

Mercury is much relied on by many in this disease, and some would salivate, if they could; for they have observed some cases to do well when salivation has commenced. It is, however, very difficult to salivate children, fortunately; for, when salivated, they suffer much indeed. Calomel should be given in moderate doses, about 1 grain, or even 2 grains, every four hours, to a child about twelve months old. If these doses purge, do not add opium, but some kino or catechu; and if it still operate freely on the bowels, discontinue the powders, and let 30 or 40 grains of mercurial ointment be rubbed into the inside of the thighs every night. In all cases, discontinue the calomel as soon as green evacuations pass from the bowels, resembling wet tea-leaves or chopped spinach.

Blisters, during the early inflammatory stage, should not be applied; they may only add to the irritation; but during the period when coma makes its appearance, blisters are likely to prove serviceable.

Dr. Gölis's plan of treatment, whose great experience in this disease gives weight to his recommendations, is this: In the first stage, a dark room, repose; to be kept cool rather than warm. In children from one to five months, one-fourth of a grain of calomel; in those from six months to two years, half a grain every two hours, till four or six green stools appear. In irritable, costive habits, a few grains of roasted jalap may be added. If colicky pains or looseness ensue, leave off, and resume the calomel at longer intervals; but violent pains in the belly, diarrhea, and gastric irritation forbid calomel.

Emollients may be given. Infusions or decoctions of marshmallows or barley, or gum arabic water, with or without niter. Gum arabic emulsion relieves the headache sooner than any thing. No other medicines externally; cold to head, mustard foot baths, blisters, and mercurial frictions; this is the only stage for mercurial frictions. Mercurial ointment, 60 grains to nape of neck, back of head, and thighs, every three hours.

Inflammatory stage, blood-letting, in children from six to twelve months; if the attack be sharp, three, four, or five ounces of blood

may be taken; but I rely upon leeching; and in children of the second, third, or fourth year, six ounces of blood have been drawn. A second bleeding should never be required. Continue the calomel until colicky pains and green stools follow. Cold to head, applications to feet as before, blisters to the belly; for, if applied to the head, they interfere with the cold applications. Too late for mercury.

And if we have succeeded in checking or curing the disease, then tonics, with caution, and blisters kept up for some time. In the last two stages the treatment is merely palliative. Such are the directions of Dr. Gölis, as the most conformable with his experience.

In this, as in every other fatal disease, prevention ought to be the great object aimed at, by avoiding all exciting causes of disease, whether mental or corporeal; disease once established in a scrofulous habit is very difficult to combat.

CHRONIC HYDROCEPHALUS, OR WATER IN THE HEAD.

The acute form is an inflammation; this may be termed a dropsy. There are certain parts of the brain, called ventricles, or little cavities, within which a watery fluid collects; and why it collects we know not, only we observe that such circumstances happen only or chiefly to those who are of a strumous habit. This collection happens at an early period of life, and before the whole of the brain-case has become solid; the bones, or rather the containing parts, yield to the pressure, and the head is increased in size, and the functions of the brain are more or less deranged. Sometimes these collections of fluid have taken place before birth, and the pressure during child-birth has caused the head to burst, and death immediately to ensue; but, in most cases, the fluid begins to accumulate at some uncertain period after birth, and the collection increases often rather rapidly; and the bones are separated from each other as the pressure from within the skull continues to increase; the forehead is tilted forward, so as to overhang the brow; the side bones of the head bulge above; the back head bone is pushed back, and the head may become long, broad, and deep, but flattened at the top. The inward pressure from the fluid might cause the head to assume different shapes, but in all there is a peculiar and odd look; the face is triangular; for while the bones of the

skull are, it may be, rapidly enlarging, the bones of the face do not grow faster than usual, perhaps not so fast. This disproportion between the size of the head and face, is said to be very characteristic of water in the head.

The child is topheavy, and the muscles of the neck can not support the weight of the enlarged head, and the child is found to be deaf or blind, or, perhaps, palsied in one or more of its limbs, or idiotic, or all these. The issue of the majority of these cases is, that they either die or recover during infancy; a few survive for an uncertain number of years, and enjoy sufficient intellect for the common purposes of life. In these latter cases, the liquid within the brain causes the substance of the brain itself to expand into new forms; there is no loss of the substance of the brain, for the pressure of the contained liquid has been gradual, and the unfolding of the brain has been also gradual. So long as the brain-case yields to the pressure, and there is no counter or opposing pressure, all goes on well enough; but there is a time when the opening in the skull, so remarkable at birth (called the fontanelles), close up, and this time is a period of danger. It may happen that, though the fontanelles are closed, the bones of the head still have left intervals of membrane between the points of ossification, which yield to the pressure, and it may happen that the distending force causes the lines, called the sutures, to break open, and to separate more or less widely, effectually relieving from all pressure.

Treatment.—Mercury seems to be the only remedy that has done any good, though purgatives and diuretics have been praised. Leeches occasionally may be applied, and they will help. The German physician Gölis, who has written on this subject, advises us to give calomel, half a grain, twice a day, or, if half a grain purge, then only one-fourth of a grain; and, also, at the same time, to rub into the scalp from twenty to forty grains of mercurial ointment, mixed with ointment of juniper berries, every night, and a woolen cap is to be kept constantly on the head. Ptyalism (an abundant flow of saliva) is but seldom produced in children.

There are two mechanical remedies; one acts by relieving the pressure, and the other by compressing the skull bones. The first can only be done by a surgeon; it is to let out the fluid by operation, and recoveries are on record of the successful results. The other might be tried—it is bandaging the head. We have seen that safety can only be secured by the yielding of the bones, so

long as the fluid is increasing; but when the disease is stationary, and the unconnected bones are loose, and the child pale and languid, moderate pressure may help very much.

Strips of adhesive plaster, about three-quarters of an inch wide, are applied completely around the head, from before backward, reaching low down to the tops of the ears, and lapping behind over each other. Cross strips are then applied. All will depend on the accuracy with which these strips are placed, for the pressure must bear equally over all points.

Dr. Arnott's air-press has been recommended as well adapted for this purpose, instead of the strips.

THE THRUSH—APHTHÆ—STOMATITIS.

Symptoms.—Heat and redness of the lining membrane of the mouth to a greater or less extent; the tongue and mouth are often dry, the lips often swelled, and are surrounded by an eruption, and sometimes there is a dribbling of saliva.

This is inflammation of the mouth, which is caused by improper feeding or by cold, and requires usually only mild drinks, barley-water, mucilage of gum, etc., unless it be merely a sign of irritation in the bowels; then the bowel disorder requires attention. But there is also an inflammation attended with ulcers, and then the disorder is called the thrush. In some cases the ulcers are of a common character; they are usually large and irregular in shape, covered with white or yellowish sloughs or coats, and are surrounded by much redness. They may be observed on the inside of the cheek, roof of the mouth, or on the tongue even. Sometimes, about the period of the first dentition, the gums become spongy, and of a dark purplish hue, and the ulcers bleed often. Local irritation, with fever, restlessness, and disorder of the digestive organs attend.

Treatment.—Treatment of this ulceration consists in touching the ulcers with a linctus:

No. 222. Borax or alum..... 5 to 10 grs.
Honey of roses..... 1 oz.

in regulating the bowels, in light nutritious food, and exposure to fresh air. Should the ulcers not look better after a time, then touch their surface with lunar caustic, or with this very excellent application:

No. 223. Sulphate of copper..... 10 grs.
Honey..... 1 oz.

Apply two or three times a day, by means of a camel-hair pencil.

An anodyne may be required at night to quiet restlessness; and tonics, especially quinine, must be given.

The ulceration called the thrush, is a small circular white ulcer called aphtha, arising at the period of teething mostly, but also at other times.

These aphthæ in adults are connected with disease of some internal organ, mostly with that of the stomach and bowels; and they sometimes are so connected in children, and are most frequent in ill-fed children; and they may spread from the stomach to the mouth, or may coëxist at two distinct points, viz., the mouth and the anus. Kissing the lips of an aphthous child may cause the disorder, though the nurse's nipple does not become aphthous, but it may be red and irritated.

They sometimes spread epidemically.

Symptoms.—The ulcers do not always have inflamed circular margins; the mouth is hot, and the child is fretful and uneasy. A small white spot appears, occurring singly or in clusters, on some part of the mouth or throat. When they are very numerous they quite cover the inside of the cheek, and become covered with a continuous crust or coating of a whitish hue. On removing this, ulcers are visible beneath, and the coating is quickly again secreted over them. These crusts as they become detached are swallowed, and cause disorders of the bowels.

The bowels are deranged, being constipated, and the secretions vitiated; or diarrhea may attend, and acidity is present; difficult swallowing; and sometimes the tone of the voice alters, or the breathing is peculiar, or there is a cough. These last symptoms demand attention, for they give token that the inflammation has extended, or is extending, to the air-pipes. When the whitish color changes to a yellowish or dark color, we should try to ascertain if this proceed from their being tinged with bile or blood, or whether the changed color is an indication of their assuming an unhealthy or gangrenous character. And we may fear this is the case when dark sloughs replace the light colored ones.

Gangrenous aphthæ become brown, are covered with a hard sort of crust, or one soft and of consistence like thick gruel or panada, but when detached the part beneath appears very red or granulated.

The parts around are of a violet hue, and a fetid smell occurs, and this is what is called the black thrush.

Aphthæ are not dangerous, whether attendant on other diseases or not, or numerous or of long standing or not, so long as they remain of whitish color, and the strength of the patient is not materially affected; but they are not favorable when they accompany intestinal disorder; still less so when the color changes, as we have described, and the strength fails.

They are most of all to be dreaded when an extension of the disease to the air-passages is to be dreaded; so, when the child's voice becomes hoarse or indistinct, and the breathing croupy and spasmodic, with fits of suffocation and cough, immediate danger threatens, if indeed the case be not already hopeless. It is wonderful how small an amount of ulceration seems capable of destroying life, if once aphthæ pass over or even reach the cheek at the top of the wind-pipe, or rather voice-pipe.

Treatment.—When these aphthæ are local, local means suffice to cure. A dose of castor-oil, with the borax or alum linctus. If there is acidity, instead of castor-oil, give

No. 224. Powdered rhubarb.....	20 grs.
Powdered magnesia.....	40 grs.
Cinnamon powder.....	10 grs.
Mix.	

Three or four grains every third hour, to a child of six months, until the effect desired is produced. Six to ten grains if the child is a year old.

When the bowels are too loose, the compound chalk mixture, and every night gray powder with Dover's powder; but when the general powers fail, then the quinine mixture and the ammonia, with the citrate of iron, must be given.

No. 225. Distilled water.....	1½ oz.
Sulphate of quinine.....	2 grs.
Sulphuric acid.....	16 drops.
Syrup.....	½ oz.
Mix.	

Dose—One or two tea-spoonfuls, two or three times a day.

The local treatment has been alluded to.

A solution of chloride of soda is useful, but the sulphate of copper is the most efficient application.

There are other kinds of inflammation in the mouth, with exudation, soft and white; this may be called the white thrush.

DIPHTHERIA.

This is an acute inflammation of the wind-pipe, characterized by a tendency to the formation of false membranes. It is not attended with ulceration, but gangrene sometimes follows.

This form of inflammation varies with the powers of the patient, and the degree or character of the attending fever and inflammation; and it may rage as an epidemic, attacking adults as well as children. Our chance of successful treatment depends on our early distinguishing the nature of the disease, for that is the time to arrest its progress. There is an exudation or pouring out of a secretion, which forms a membrane, but there is no breach of surface, no ulceration.

We find the mucous membrane of the mouth and gullet of a bright red color, which membrane becomes quickly studded with specks or patches of false membrane, seen on and at the back part. They soon become a continuous layer of a thin, white, concrete substance in severe cases, or in still severer, the lymph is deposited in masses of a gray or yellowish color. This may be scraped off, but it is soon replaced, the palate and neighboring parts swelling, though swallowing is not difficult, nor is there much pain. The accompanying fever is slight, but when this accompanying fever assumes the malignant or typhus type, the epidemic is likely to be of a fatal nature.

This malignant form begins insidiously, but from the beginning there are signs of prostration of the bodily and nervous powers, which foreshadow the approaching danger. The redness is trifling, but swallowing soon becomes difficult, and often liquids are returned through the nostrils; the glands under the chin swell. The membrane formed is extensive, and is of a yellowish gray or dirty ash color, and when tinged with blood it is of a dark color, and smells most fetidly. If scraped off, the parts beneath are not ulcerated, and the fetor seems to arise from the putrefaction of the membrane.

The danger arises from the extension of this membrane into the air-passages, and this will certainly occur if the disease be not arrested in its progress, or if the sufferer be not previously destroyed by the accompanying malignant fever. The skin is cool; the pulse rapid and feeble; delirium and stupor follow, and the patient may be cut off in a day or two, or within the first twenty-four hours. The extension into the air-passages is made manifest by the ad-

dition of signs of suffocation, by a hoarse or indistinct voice, by a frequent, harsh, croupy cough, by laborious and convulsive breathing. The face becomes pallid, then livid, and coma or convulsion follows.

Strong and healthy persons, and children living in healthy sites, do not often suffer from this malignant form, though in an epidemic they may not be spared.

We distinguish diphtheria from the thrush, either white or black, and from gangrenous sore throat, by scraping off a portion of false membrane; when in the diphtheria, we find the subjacent surface in a state of integrity, whereas in the other two ulcerations become immediately perceptible.

Treatment.—Our main object is to prevent the spreading of the membrane into the air-passages. To have a chance of doing this effectually, be careful to examine early the mouth, for the membrane is sometimes completely formed before any uneasiness is felt in the parts. The instant we see the membrane, we must, by means of a camel-hair pencil, apply a strong solution of lunar caustic (nitrate of silver), twenty grains to one ounce of distilled water, all over the diseased parts, and this must be repeated to prevent a renewal of the membrane, which is liable to recur. Thus we arrest the spread of the inflammation and check the deposition of lymph, when done at the very outset. A saturated solution of the sulphate of copper (that is, as much sulphate of copper as the water will dissolve) will produce a similar effect.

But if we see the disease in a severe, malignant form, or at a later period, our application must be more influential than the above-stated, and we must apply freely, by means of a piece of sponge attached to the end of a probang or a common stick, a mixture of muriatic acid with one or two parts of honey. The sponge is to be pressed firmly against the membrane, which thus, even after it has become putrid, has been destroyed and detached. It is often necessary to apply the acid a second or even a third time; usually twice in twenty-four hours will suffice.

Mercury has been recommended, and in grown-up persons it may be useful in checking the membrane, producing inflammation; but it is of little or no use with children, except as an aperient.

An emetic might be given at the commencement, to dislodge the membrane, but our chief reliance is on the local treatment, except in the malignant or epidemic form; then general treatment, to keep

up the powers, becomes as necessary as the local treatment. Ammonia, ether, quinine, and wine in arrowroot or sago, must be given, in proportion to the prostration and to the progressive sinking of the strength. When the fever is of the mild character, James's powder, or any of the medicines to induce perspiration, may be given.

Change to another and perhaps a purer air is requisite.

CANKER OF THE MOUTH

is an ulceration, running rapidly into gangrene; the symptoms, general and local, resemble those already detailed in diphtheria, except that no membrane is formed, nor aphthous specks. The treatment corresponds, and the applications of sulphate of copper or muriatic acid with honey, are to be made in like manner, while the fever is to be treated early with tonics and stimulants, as typhus fever is combated.

MERCURIAL MOUTH

is known by a coppery taste, and a breath with a peculiar fœtor in it, which may, in most cases, be easily recognized by those who have once seen a case of mercurial gangrene in the mouth. Similar treatment with the foregoing.

Some constitutions are so peculiar in respect of the influence of mercury, that very slight doses of calomel, etc., produce a most extraordinary influence in them, and very slight doses have produced most alarming results. I once gave to a lady a pill containing one grain of calomel only, yet the mouth, gums, and throat swelled to such a degree as to prevent the patient from eating any thing solid, and even from swallowing liquids for a fortnight. Had I been aware of the idiosyncrasy, I would hardly have dared to give one grain of calomel. Time, free air, support, tonics. If gangrene occur, the treatment is that prescribed for diphtheria.

INFANTILE INDIGESTION

may be divided into indigestion during suckling, and the indigestion of weaning.

In the first, the child becomes peevish, fretful; loses flesh, not-

withstanding its sucking vigorously; but the more the child sucks, the worse it becomes; the milk is soon thrown up again in a curdled state, or it is rapidly passed downward; griping, flatulency, and acidity are present, until, at last, diarrhea sets in, which carries off the infant in from two to four weeks.

Treatment.—The cause must be discovered, and, if possible, removed; if the milk is bad, the nurse must be changed; and to check the diarrhea, some chalk mixture, with a very cautiously proportioned addition of opium. The following may be tried:

No. 226. Chalk mixture.....	1½ oz.
Bicarbonate of soda.....	10 grs.
Syrup.....	2 drs.
Tincture of opium.....	4 drops.

One tea-spoonful three times a day, increasing the dose gradually.

Indigestion during Weaning.—There is always a risk of disease at weaning time, and the irritation of dentition takes place about this time, too. The food is thrown up, and irritation of the stomach may be permanently set up. It happens more frequently in autumn, and the supervention of the weaning-brash during autumn is so remarkable, that Dr. Cheyne advised weaning to be postponed beyond the autumn months, if possible. Bowel complaints are always prevalent during the autumnal months.

Symptoms.—A purging of green matter is generally the first symptom, and this disease has, by some, been called the green scour. Retching and vomiting are added; then short periods of constipation may alternate, the biliary secretion being suppressed, the stools being light and clay-colored, thin and watery, or thick, like half-boiled flummery. Peevishness, restlessness; no desire for food, only for drinks; little fever; pulse scarcely affected; skin not very hot; cold feet and hands; the belly full, but not tender; tongue long continues clean and moist, but aphthæ may appear at last. In some, coma and convulsions come on, and the emaciation becomes extreme in about four to six weeks.

If vomiting be added to purging, the case assumes the appearance of cholera.

The food disagrees, an irritation is set up in the bowels, and to this inflammation and ulceration succeed.

As to the result, we may often give hope to a despairing parent, even when her child is lying in a state of great emaciation, pro-

vided we are sure that we have discovered the cause, and also that we can remove it; it is surprising from what a state of exhaustion an ill-fed infant may be recovered.

Treatment.—Change the nurse, or give asses' milk, with weak broth, free from fat; then arrowroot, or barley-water, with gum or isinglass dissolved in it, may be given. Milk disagrees in general, and, if given, it should be previously boiled and diluted with one or two parts of water. Boiled bread and milk, or rice milk, have been found to disagree. A good drink may be made by scraping some flour which has been boiled in a napkin, and allowed to become dry, into equal parts of milk and water; then boiling and sweetening the mixture. Avoid always much sugar.

For medicines, those which check the vomiting and purging, while they allay the irritation, are the best. Throw up an injection of starch mucilage two ounces, and one drop of tincture of opium. Then give this mixture:

No. 227.. Cinnamon water.....	1 oz.
Chalk mixture.....	$\frac{1}{2}$ oz.

Or, instead,

No. 228. Compound chalk powder.....	40 grs.
Tincture of kino.....	2 drs.
Syrup.....	2 drs.
Tincture of opium.....	4 drops.

One to two tea-spoonfuls every second or third hour, until the looseness is checked; then give it after each liquid stool.

If the stomach be very irritable, give this:

No. 229. Mint infusion.....	1 oz.
Mucilage of gum arabic.....	$\frac{1}{2}$ oz.
Liquor of potash.....	6 drops.
Syrup.....	$\frac{1}{2}$ oz.
Compound spirits of lavender.....	30 drops.
Tincture of opium.....	2 drops.

One to two drachms for a dose.

Fomentations to the belly of hot flannel, or the warm bath, if the child is strong enough.

If the stools are clayey or light-colored, two or three grains of gray powder, with a grain of Dover's powder, or two of the compound chalk, with opium.

When debility and exhaustion come on, a drop or two of spirits of ammonia, as in foregoing cases.

CHOLERA INFANTUM.

The cholera infantum is a disease confined to children between the ages of three months and two years, but which sometimes occurs before or after these periods. It is almost always an affection of warm seasons, beginning with the first hot days in April or May, not waiting for the month of June, at least in the Middle and Southern States; for we have often observed it in May, though it is true that it is mostly an affection of the summer months. When autumn arrives, but little more is seen of it until the ensuing year; still, however, chronic cases run into this season, and not unfrequently prove fatal in September and October. The cholera infantum belongs mostly to densely-populated cities and large towns, yet it is often met with in the country, indeed much oftener than writers on the disease are aware of. We have often seen it in the more hilly parts of Ohio, but still more often in the malarious regions of the West. Wherever infants are badly nourished, and kept in close and hot rooms, it is found; and not unfrequently among the wealthy, where mothers often suckle badly; indeed, this is one of the causes which is most prominent in the chain of circumstances which brings it on.

Symptoms.—The attack of cholera infantum is frequently preceded by diarrhea, though occasionally vomiting and purging begin simultaneously. Frequently the vomiting begins before the purging, when the disease runs its course in a short time; the vomiting mostly continues to near the last in fatal cases, but when the result is favorable, it terminates, after continuing a few hours, in diarrhea. This disease is occasionally rapid in its progress, the vomiting and purging being almost incessant. Nothing will stay in the stomach, and the short intervals are marked by pain and languor; then prostration comes on, with cool and clammy skin, and pale and shrunken features; the eyes are half closed; the restlessness is now replaced by insensibility, terminating in coma and death, in from twenty-four hours to two, three, or four days.

More frequently, however, the attack is attended with symptoms of fever; that is, there is heat of the skin, with dryness. Under these circumstances, the case is frequently protracted through several weeks or more. The fever which attends such cases is characterized by a feeble and quick pulse, though sometimes corded or vibrating. The mouth is hot and dry; tongue dry and furred;

the temperature of the body and head are above the natural standard, while the limbs are below it; delirium, too, occasionally attends, with stupor, etc. The abdomen is generally much sunken, but is occasionally swollen. As the affection advances, the patient emaciates rapidly. The flesh now becomes soft and flabby; the skin is either clammy, or harsh and dry; the tongue still with a white coat, or brown, with red edges, and sometimes with ulcerated edges, or aphthous. Sometimes the skin has blue patches scattered over it, which are often very small. In this way the child gradually sinks, but, before death, the eyes become bloodshot, and are kept half open, while the sufferer rolls its head, and throws itself from side to side, and at length becomes comatose, and not unfrequently dies convulsed.

During the disease there is constant desire for drink, but if taken freely, it is immediately thrown off the stomach. Sometimes the patient takes food, and frequently desires articles unsuited to the disease. A return of the appetite, even in the capricious condition, is a favorable symptom. The discharges from the bowels are, at the beginning, nearly always light-colored, after the first two or three evacuations; but after the malady has moderated, they change, the color becoming dark or light-green, and occasionally mixed with mucus or yellowish matter. After some time, the child strains when its bowels are moved; then the evacuations become small, and the patient strains much at each evacuation, which sometimes causes the lower part of the bowel or rectum to protrude at every stool, and this condition of the bowel continues for weeks, or even longer. The fever attending the disease is always of a remitting character. As the duration of chronic cases varies very much, and although it often wears the sufferer out, it is often subdued by proper medication, or the coolness of autumnal weather; the diarrhea gradually subsides, the appetite becomes less capricious, the urine is more copious, the liver acts more naturally, the skin now loses its unhealthy tone, and becomes soft, with a natural temperature, and eventually complete health is restored.

Causes.—The chief cause of cholera infantum is, undoubtedly, owing to bad nursing on the part of the mother, her milk not being of the right composition, or deficient in quantity. Often the mother is too feeble to give proper nourishment to her offspring; and again, she feeds the child on all kinds of food that it wants, and at improper times, indulging it whenever it cries or shows impatience.

This course must, in many cases, cause the death of children, for much of their food given in this manner passes through the bowels undigested, and, therefore, causes much irritation.

It is obvious that great heat of the weather, combined with a dense population, as in large cities, must often be the direct cause of the disease, which is still increased among the poor by the fires which they must have for cooking purposes. Hence the necessity for removing patients to the country, or open situations, where there is free ventilation, which, indeed, is of great importance. In the United States the opportunities for change of air and climate are probably the best in the world. Our steamboats and railroads carry passengers rapidly from one point to another. A sick child, in a very low state at Cincinnati, can be taken to St. Paul, the Island of Mackinaw, or to Canada, in a few hours. The change on patients laboring under chronic diarrhea is seen, often, in a day or two. The high situations in various parts of our country, even far to the south, will answer an excellent purpose for recuperation.

Removals to such localities, with proper nourishment, will generally give relief. Yet there is nothing equal, with children at the breast, to a wet nurse with plenty of milk, which we have observed to do more than all other means; and, when this is done, we mostly rely on it altogether, and find it sufficient for the cure; but in older children, change of air is of the greatest importance.

It must, however, not be forgotten that the time of weaning children is at the end of the first year, or about that time. Now, teething has only partially taken place, and does not end until the close of the second year, which is the one most dreaded by mothers, as then feeding has to supply the place of human milk. This change frequently brings on various disturbances of the stomach, that occasionally lead to cholera infantum and its consequences. The teething is now more difficult, and for this reason creates more disturbance of the constitution, sometimes resulting in head affections, diarrhea, and convulsions. It is, however, our opinion, that there is generally too many evil consequences attributed to this matter, as we have observed that healthy children get through their teething without complaint, while the unhealthy seem to suffer. The fact is, that bad health is the cause of suffering in teething, and not teething the cause of bad health; still, it is best to watch the condition of the gums, and have them scarified, or cut, when much swollen or inflamed.

When the child is weaned, it then has to rely on other food than the mother's milk, which reliance often brings disturbed bowels, unless a judicious course of diet be adopted; and if the child has to be weaned at an earlier period than a year old, still more care has to be taken, to prevent diarrhea, etc. In case that the child has to be deprived of either the mother's or a wet nurse's milk, then the next best course is to feed it on fresh cow's milk, diluted about one-third with water. "The farinaceous liquids prepared from barley, rice, tapioca, sago, arrowroot, wheat bread, water crackers, etc., may also be used; but care must be taken that these substances are entirely free from acidity or mustiness;" they should only be given in small quantities at once. From the thirst that attends diarrhea, the patients often want to take more than the stomach will retain, and when thrown off, the same desire still continues; to relieve this, small quantities of iced-water should be given, or, if not easily obtained, water as cold as can be got.

When the disease is much advanced, and the patient quite enfeebled, it is proper to give a portion of animal food, such as weak chicken, or mutton broth; and, Dr. Wood tells us, that the child may be allowed to suck a piece of ham, or dried salt beef, or fish, if these, upon trial, should be found grateful. Where the sufferer evinces a longing for some particular article of food, this should be responded to as much as possible, and if found to disagree, it should be discontinued. The clothing should be light and warm, such as light flannel, and ought to be made to cover the upper part of the chest and the limbs.

Treatment by Medicine.—In the first stage, the attention should be directed to checking the excessive vomiting; for this purpose, rubificients ought to be applied over the stomach, so as to excite redness of the skin. Mustard and flour, in equal portions, will effect this the soonest, and should be first resorted to; half an hour, or an hour, will be long enough to use this application, when hot whisky, with mint, may be substituted, or, what is better, black pepper, cinnamon, ginger, and cloves, in equal proportions, with enough of flour to make a paste, and spread on muslin, so that it will cover the stomach and bowels. This plaster should be renewed every four or six hours. Next to these applications are those to be taken internally, and we shall advise what we have found most useful, and which are most simple. If no other medicine be on hand, five or ten drops of paregoric should be given in

a little cold water, and repeated every half hour, for two or three times. Laudanum, in one or two-drop doses, may be used in the same way. Peppermint water, in half tea-spoonful doses, with two grains of carbonate of soda and a drop of laudanum, may be directed every hour or two, with advantage, and during the violence of the vomiting and purging, twenty drops of brandy or whisky should be given every half hour, until the symptoms abate. But what is most useful in this affection, is small doses of calomel, with opium in minute quantities. Take ten grains of calomel, with half a grain of opium, and a drachm of white sugar, mix them well, and make twenty powders. One of these, with a little syrup or molasses, should be given to a child two years old every fifteen minutes, until the vomiting and purging cease, or until the child falls asleep. To a child three months old, only half the amount should be given, and a little more, as the age increases. It must not be forgotten that a most distinguished physician (Dr. Dewees) recommends for the same purpose a tea-spoonful of strong coffee, without milk or sugar, every fifteen minutes. Should these means fail, from two to six drops of laudanum, with two table-spoonfuls of thin starch, should be injected into the bowels, and prevented from running off for a few minutes. This may be repeated every few hours, care being taken to avoid the improper effect of opium.

After the vomiting and purging has been arrested for the time being, but a diarrhea sets in, the best course then to take is to give small doses of calomel, with chalk and Dover's powder, every four, six, or eight hours, or less often, according to circumstances. To very young children, a fourth of a grain of calomel, with the same amount of the Dover's powders, and two and a half grains of prepared chalk, may be given, as occasion may require. A good method is to give a powder after each evacuation. To patients two years old, the dose must be doubled. But when the diarrhea, following cholera infantum or not, resists other means, then vomiting with ipecacuanha is the best remedy. This is particularly proper when the discharges are frequent and small. For a child two years old, five grains should be given at once, and then give no more. This amount will mostly vomit the patient; but sometimes it does not, but causes sleep, and, at the end of some hours, acts on the bowels. Of all the remedies which the writer has ever tried, he considers this the best in such cases as are here described. The ipecacuanha may be repeated once a week for a few times.

In advanced cases, the following prescription, from Professor Wood, may be tried with advantage :

No. 230. Blue pill.....	6 grs.
Pulverized opium.....	} of each 2 grs.
Ipecacuanha.....	
Prepared chalk.....	} of each 60 grs.
Gum arabic.....	
White sugar.....	1 drachm.
Mint-water.....	2 oz.

Mix these, and give a tea-spoonful every two hours, or as occasion may require. When there is much debility, eight grains of tannin may be added to the mixture with advantage. When diarrhea is mild, there is but little needed further than the following prescription :

No. 231. Bicarbonate of soda.....	$\frac{1}{2}$ dr.
Mint-water.....	4 oz.
Laudanum.....	15 drops.

With a drachm of sugar, combined. From half a tea-spoonful to a whole one may be given every four hours, or when food turns sour in the stomach.

There are one or two circumstances which must be observed during the course of the various stages of this disease. The first is the local congestions or inflammations that sometimes occur either in the brain or its membranes, and also in the contents of the abdomen. This is known by rolling of the head on the pillow, accompanied by wakefulness, and then stupor; the second, by tenderness over the stomach, or at other points of the abdomen. To relieve these symptoms, a few leeches near the point affected will do most; from two to four leeches are all that should be applied at once, but this should be done, if possible, under the direction of a physician. When the patient is too sick, or weak from the loss of blood, small cups should be used, with or without scarifications; and after or before liniments should be used, or fomentations with hop-water, or warm water alone. The second circumstance is the debility which attends the advanced stages of the disease. It often becomes necessary to give gentle stimulants in these cases, which not unfrequently save the lives of patients worn down to the last degree of debility and emaciation. Wine is the best of stimulants in such cases, and of all the wines that can be got in this country, the native wines are the best, and those called sparkling are preferable. A tea-spoonful of the sparkling or still catawba may be directed

three or four times a day. During the earlier stages of the disease, as has been stated, good spirits are sometimes preferable.

In malarious localities, infants are occasionally born with a predisposition to ague, and we have seen a few cases where it came on but a few days after birth; but it much more frequently makes its appearance within a few weeks, and often does not appear until the end of the first year, or later. Now, these infants, thus diseased, are subject to the cholera infantum more often than those not laboring under it. The treatment, then, must be different. To what has been directed for the cholera infantum, must be added quinine, in suitable doses, which should be given in solution, and, to a child two years old, in half grain doses, every four or six hours during the interval. To younger children, the dose may be diminished to the fourth of a grain. Four grains of the sulphate, dissolved in an ounce of water, with enough of sulphuric acid to make it dissolve, make a convenient combination. One tea-spoonful can be given as a dose, or the quinine may be mixed with a little syrup, when given. This medicine must be continued until the chills disappear, and as there is no trembling, but simple coldness of the feet and hands, and paleness of the lips, much close observation is necessary to detect this form of ague. Remitting bilious fever not unfrequently occurs in young children, which is different from other fevers to which they are subject, that remit more than in adults. To properly discriminate between them, the localities in which they live, or were born, must come into consideration.

DIARRHEA.

The symptoms of this complaint are a precarious appetite, or none at all; thirst; tongue loaded, being white or yellow, with sometimes the sides and tip red; apthæ, flatulency, acidity, and griping. Soon emaciation is added.

The stools may be feculent at first, only very liquid; but they soon begin to be charged with mucus, and they consist often solely of mucus, which appears like jelly, quite transparent, or lying at the bottom of the vessel like semi-transparent mucilage. This excess of mucus may be connected with an inflammatory state, or a highly irritable state of the mucous follicles, and with a superabundant mucus in the stomach and bowels; and this latter is evidenced by what is vomited and by what passes from the bowels.

Worms may cause this mucous diarrhea. The stools are sometimes of a bright green or a grass green color, and the looseness has been called bilious. This is accompanied by irritation of the bowels, especially of that part into which the bile ducts open.

Yellow and frothy, or very green stools, with pain in belly, are signs of inflammation of bowels. Derangement of the liver is usually attended with dark brown motions, or even black, like pitch, and very offensive.

PROLAPSE OF THE ANUS OR BOWEL

is not unfrequent. Here a large portion of the membrane of the bowel is protruded, which may inflame, ulcerate, or become gangrenous. Blood is at times discharged from the bowels.

In diarrhea, the state may degenerate into a chronic form, and may depend on chronic disease in the mucous membrane of the bowel; or it may depend on a want of tone, or habitual derangement of function; and when long established, it may be difficult to remove, while children who have suffered are liable to a recurrence on committing any errors in diet.

Treatment.—Diet is the first point to attend to, often the sole one necessary; food should be in small quantity, of least stimulating quality, easy of digestion, leaving as little residue as possible.

In the recent stage, gum-water, barley-water, slightly sweetened, or both mixed, form both food and drink. Then arrowroot, made thin, may next be given, and is very good food, being little liable to become acescent; but arrowroot is not usually liked by children.

Milk, or bread and milk, or the breast-milk even, usually disagrees. Rice is a chief article of diet; it leaves but little excrementitious matter; it must be thoroughly boiled, and may be moistened with broth, or water. Then light broths—chicken broth; and then, if the child is old enough, chicken itself, with rice, or some of the gravy of roast mutton, with rice.

Vegetables must be avoided, also fruits; also veal, lamb, or fish.

Keep the surface warm; a flannel swathe round the abdomen; fomentation, friction; change the air.

As to medicines, the question which first arises is, Shall we begin with an aperient, to clear away offending matter, or with astringents, to stop the stools at once?

We may use aperients when the diarrhea is recent, when it oc-

curs in connection with an overloaded state of the bowels, is accompanied by feculent discharges in full, overfed children, and in cases attended with much fever; but when the infant is young, and the evacuations profuse, we should give astringents, etc., immediately.

Opium and the alkalies are the remedies indicated—carbonates of potash or soda, then the compound powder of chalk, and all combined with opium.

When there is acidity, the chalk mixture; this acidity is known by the light green and watery evacuations, by the smell, by pieces of curd appearing in the stools, and by the green color becoming more vivid on standing; by a sour smell of vomited matters, and the curd in them, and by a dense white coat on the tongue, which is a stratum of milk—coagulum.

For bearing down, five or six grains of carbonate of soda or of potash, with one drop of tincture of opium, in two ounces of starch mucilage as an injection, is often effectual.

This mixture is a good one:

No. 232. Cinnamon-water.....	1 oz.
Mint-water.....	$\frac{1}{2}$ oz.
Carbonate of soda, or of.....	} 10 grs.
Compound chalk powder.....	
Tincture of opium.....	6 drops.
Syrup.....	2 drs.
Mix.	

Give 60 to 120 drops, three or four times a day, according to the age and the number of stools.

If the looseness do not yield, we must add to the mixture two drachms of the tincture of kino, or of catechu, or of both, instead of the half ounce of mint-water.

Kino may be given, even when there is some inflammatory disposition left. It will restrain the over-secretion of glands, and will check diarrhea; but it does not induce a tendency to costiveness afterward.

When the stools are loaded with much mucus, then we should add small doses of ipecacuanha, or give some at night, as in Dover's powder.

Diarrhea, then, ought to be arrested when exhaustion is produced; but we must be very cautious when it is of long standing, and does not seem to be doing harm, as in teething, or when the looseness seems to be the result and accompaniment of inflamma-

tion, in which latter case it may do good by reducing or carrying off the inflammation.

The remedies are the chalk mixture, with or without opium, to which kino and catechu may be added, if the looseness do not yield; but on any heat or fever arising, the astringents must be discontinued, and fever medicines given, fomentations used, etc.

When the bowel comes down, return it gently, and throw up an ounce or two of lime-water, and give brown sugar or molasses for diet, to make the evacuations soft. As the health returns, the bowel will no longer protrude. When convalescent, the bitter infusions are useful.

The term *weaning rash* has been applied both to indigestion and diarrhea, and must be treated as above stated.

WORMS IN CHILDREN. (See WORMS.)

CROUP, TRUE AND SPURIOUS.

This is most common between the first and tenth year, and seldom occurs after puberty. It is an inflammation of the voice-pipe (larynx) and of the air-pipes (trachea and bronchi), and it ends by forming a membrane on the inner surface of these tubes.

The organ of voice has a chink called glottis, the size of which remains nearly equally narrow up to twelve years of age; after puberty, this chink enlarges considerably and suddenly in the male, in the proportion of ten to five; in the female, of seven to five. The limit of the period of occurrence of this serious disease is thus marked.

Some families are much affected with croup, and it is very rife in some damp, cold situations.

Once attacked, there is a liability to a recurrence on slight causes; but those weaned are more liable than suckling children. During the north and easterly winds, and at the end of winter and spring, it is frequent.

Symptoms—are those of common catarrh, with hoarseness and rough cough. The attack is sometimes sudden, but hoarseness and cough are suspicious when there is any reason to suspect an attack of croup. A single cough, as if the sound came through a brazen trumpet, may be the first sign; the voice becomes sharp and peculiar, the breathing loud, difficult, labored, and, during in-

spirations (the drawing of the breath), there is a crowing sound; the face is swelled, red; eyes suffused; skin hot, pulse quick and hard to the feel; thirst, restlessness; the child feels an obstruction to breathing in its throat.

After a longer or shorter time, the fit subsides; then, if no relief be obtained, the breathing becomes more labored and wheezing, the cough hoarser and more stifling, the countenance pale or livid; the skin becomes cold and clammy; dark, bad-smelling stools are ejected; coma or convulsions may terminate the attack; or the child may, after great efforts, throw up portions of a white membrane with some matter. Death may take place between the third and fifth day; or the disease may become chronic, and continue for two or three weeks.

A sudden spasm may cause suffocation.

Stretching the neck by throwing the head backward, seems to give some relief.

Diphtheria may be mistaken for this disease, but the history and presence of thrush will show the former.

Hysteria may simulate croup; but the former disease attacks only adults.

All diseases affecting the larynx (voice-pipe) are attended with spasmodic signs, occurring in fits; hence the origin of spasmodic or spurious croup.

The distinctions may be thus laid down:

TRUE CROUP.

Catarrhal signs always; sneezing, running from the nose; cough slight at times—short, but always hoarse; trumpet-toned cough; hissing inspiration during the fit; face swollen, purple; eye livid, protruding; lips livid or blue, and the signs, of course, as above detailed.

The true croup depends on inflammation; and it is a much more dangerous disease than the spurious.

BASTARD, OR SPURIOUS CROUP.

A fit, often occurring several times a day, when the child is in perfect health; crying, laughing; awaking from sleep on any excitement. The spasm of the glottis terminates in a long-drawn, noisy inspiration, and then the child appears as well as ever. The attacks are sudden, but when they occur at night, a mistake might occur. Between the fits, true croup is marked by the continuance of the suppressed voice, peculiar breathing, whereas, in spurious croup, these soon cease after the fit.

Treatment.—An emetic is the first remedy. Give from one to three tea-spoonfuls, according to the age, of the following mixture, every quarter of an hour until the child vomits :

No. 233. Distilled water.....	1½ oz.
Tartar emetic.....	1 gr.
Syrup.....	½ oz.
Mix.	

To this, half an ounce of ipecacuanha wine may be added, if it is at hand ; if not, do not wait.

Then, if there is fever, hot skin, etc., apply leeches to the top of the chest-bone, and keep up a feeling of sickness by giving a drachm of the emetic mixture every half hour or hour, or second hour, and give two grains of calomel every third hour ; also place the legs in a bath at 98 or 100 degrees of temperature. If, after two or three doses of the calomel, the bowels are not open, give castor-oil, one, two, or more drachms. The breathing becomes less laborious, and the cough looser than before ; then we must observe a low diet, and keep the sufferer in a warm air.

If we do not see the attack in its early stage, we must still excite vomiting, keep up nausea, and give calomel in three-grain doses every third hour. Blisters to the chest-bone are here useful.

If the child is cold and sinking, we must give ammonia, wine, and burnt brandy ; and children despaired of have recovered in a surprising manner.

An operation has been proposed, but it is useless, as the membrane extends too low to allow of success.

Dr. Kemble has met with great success, and yet never bleeds nor blisters. He confines the child to a warm atmosphere and an uniform temperature, gives an emetic, and, in an hour after the vomiting, this :

No. 234. Powdered valerian root.....	2 drs.
Oxymel of squills.....	1 oz.
Tincture of opium.....	20 drops.
Distilled water.....	1 oz.
Mix.	

To a child from two to five years old, he gives a tea-spoonful every hour ; to one from five to eight, a tea-spoonful every forty-five minutes ; and the symptoms are found to give way in ten or twelve hours, never continuing longer than forty-eight hours. After subsiding, a brisk dose of calomel and jalap should be given.

In bastard croup, if the breathing is very much impeded, an

emetic, or the nauseating mixtures; and we must prevent a recurrence by keeping in an uniform temperature, rubbing tartar emetic ointment or liniment on the spine at the neck, by keeping the bowels open, by shower bath, and by occasional or regular doses of carbonates of soda or potash, in some one of the simple bitter infusions.

[The various inflammations of lungs, stomach, bowels, kidneys, or bladder may occur in children as well as in grown-up persons (the treatment of those diseases has been detailed in preceding pages), only we may adapt our remedies to the age and strength of the patient, and to the violence of the symptoms.]

THE MEASLES—RUBEOLA.

This is an eruptive fever, affecting the mucous membrane of the air passages, with a red rash over the body, the rash appearing in about three days' time.

Symptoms.—Languor, shivering, heat of skin, thirst, and the usual signs of fever. Common catarrh seems to be threatened, but there is a dry, hoarse cough, at times croupy; frequent sneezing, suffused and watery eyes, feverish face, heat and chills, quick pulse, scanty urine, hot and dry skin; sometimes vomiting and purging, at others the bowels are costive; delirium in some cases, and the patient is worse toward evening. In three or four days—in rare cases, in seven or eight days—round red dots appear on the forehead and face, afterward upon the body and limbs. On the fifth day the whole body is usually covered with the eruption; this declines on the sixth day, and by the tenth, it usually disappears. The rash gives a sensation of hardness to the finger; separate elevations may be felt, which run together into patches of an irregular semi-circular form. The skin between them retains its natural hue, and the patches are of a lighter color; but the color may change to a darker color, so as to constitute the black measles, which latter are of unfavorable tendency.

The patches are at last covered with scales, which become detached, and cause a troublesome itching.

The fever, in favorable cases, abates as the eruption appears, though cough may remain troublesome.

The measles are subjected to certain laws in a very remarkable manner:

1st. They usually attack only in the commencement of life.

2d. They occur but once in the same individual, though there are some rare exceptions to these two rules.

3d. They run a certain definite course as to order of symptoms, and as to their duration.

4th. They afford the only certain examples of disease being propagated by contagion, though they occur as epidemics at certain seasons of the year, namely, spring and beginning of summer, in which latter case they spread independently of contagion.

5th. They have the power of suspending the action of other epidemics; thus epidemics of measles and small-pox may occur simultaneously, but the small-pox, after it has been received into the constitution, may be suspended by an invasion of measles, and then resume its course after the measles have terminated their course.

Measles are not dangerous in themselves, but they may be complicated with inflammation in the brain or chest, but chiefly in the chest, when imminent danger may very soon be incurred; then measles are apt to leave what are commonly called the dregs of the measles, and they may assume the form of ophthalmia, scrofula, diarrhea, or consumption.

The latent period in measles—that is, the time between the attack and exposure to the cause—is from ten to fourteen days.

The character of the epidemic may be malignant.

Treatment.—When the course is regular, and the fever moderate, the treatment is very simple; diluent drinks, some fever medicines, with the addition of some tincture of opium and ipecacuanha wine; or this:

No. 235.	Distilled water.....	1	oz
	Mucilage of gum arabic.....	$\frac{1}{2}$	oz.
	Ipecacuanha wine.....	2	drs.
	Syrup of white poppies.....	1	dr.
	Mix.		

A tea-spoonful every second or third hour, or according to the cough.

A very gentle aperient may be given, if the bowels are confined; if not, we had better give neither purgatives nor aperients. Every thing heating should be avoided, and stimulants must especially be avoided. They are often erroneously given, “to strike out the eruption, and drive it from the heart,” as it is said.

The body, if there is much heat before the eruption, may be

sponged with warm vinegar and water ; and this process may be repeated at the period when the skin begins to scale off, which scaling off usually causes much itching.

We must jealously watch the breathing for any symptoms of inflammation of the chest or in the head. Then the treatment recommended for those diseases must be immediately begun, and carried out. The chief, if not sole danger, in this disease, arises from inflammation attacking the chest, for the tendency in measles is to inflammation. We must closely watch the breathing, as shown by the nostrils in infants, and by the quick respiration in children. There is a difficulty of breathing arising from irritation, which will pass away, as well as a difficulty of breathing from inflammation ; but the former is not always the same, and there will be an alternation of relief with great oppression, and the erect position does not relieve, and rest and sleep are often obtained ; not so in inflammation.

Here no time is to be lost ; and blood should be taken by bleeding and encouraging the oozing of the leech-bites, and giving the following powders :

No. 236. Calomel.....	20 grs.
Tartar emetic.....	1 gr.
Powdered gum arabic.....	20 grs.

Rub well, and divide into twelve powders. Give one every second or third hour, till the chest symptoms seem relieved and the breathing easy ; then discontinue the powders.

Saline medicines may be given, and drinks.

The skin in infants and young children is so very delicate that blisters should not be applied ; for they sometimes give rise to nasty sores afterward ; but this liniment may be rubbed in :

No. 237. Camphor liniment, or ammonia liniment.	2 oz.
Spirits of turpentine.....	1 dr.
Mix.	

Sop a fold or two of linen or lint in this fluid, which must have been made warm by setting the bottle in hot water, and put it on the chest, of the size and shape necessary. In twenty minutes a sufficient redness and effect will be produced.

Sometimes, when a child has been exposed to the contagion, and has had the usual precursor, catarrhal symptoms, the eruption does not appear at the proper time, but a state of sleep, or rather coma, comes on ; the warm bath, with a table-spoonful of mustard flour thrown in, has caused the eruption to appear and the coma to vanish.

A dose of calomel has done the same thing.

In one case, the breathing was intensely difficult, the face livid red, the lips dark red, and I ordered an emetic, to the immediate relief of all the symptoms, and ultimate recovery.

If little dark spots appear, like flea-bites, and there seems to exist a state of debility, then give wine, and this mixture :

No. 238. Mint-water.....	1½ oz.
Sal volatile.....	30 drops.
Spirits of sweet niter.....	60 drops.
Syrup.....	½ oz.
Mix.	

A tea-spoonful every second or third hour.

A looseness of the bowels may come on ; this must be checked, and finally stopped, in the way mentioned in DIARRHEA.

Scaly ulcerations behind the ears may be a consequence of the measles in some scrofulous constitutions. Here give gentle aperients, carbonate of soda with infusion of gentian ; and if much debility exist, sal volatile may be added. Apply spermaceti ointment.

During convalescence the skin must be protected from the cold by flannel.

Some cases of measles have occurred where there have been no signs of catarrh, and others where the rash has been of a dark color ; this latter has been called the black measles.

If the inflammatory symptoms have been effectually removed, and the bowels kept free, there will be little chance of suffering from the “dregs of the measles.”

VACCINATION, OR COW-POX.

The history of this extraordinary discovery need not here be detailed. The mode in which vaccination is performed is this : After selecting a healthy child, who has the pock in its proper stage, we dip the point of a blunt lancet into one of the cells of the pock, and then gently insinuate the point into the arm of the child to be vaccinated, choosing a spot a little below the shoulder, where the dress, or any thing else, is least likely to rub or interfere. Here make two or three scratches ; a drop of blood may make its appearance, but it is better if it do not ; the vaccine fluid is thus introduced under the outer skin of the child by letting the

lancet be wiped quite clean by the skin. If we use the dried fluid from points or glasses, we wet either for a moment with a drop or two of cold water, scrape off the vaccine matter with the lancet's point, and use it as stated.

Crusts of vaccine pocks are sometimes used; they must be wetted or dissolved partly in a drop or two of water.

About the third or fourth day, a small hard spot ought to be felt under the skin, like a pin's head; this forms a red pimple, hard to the touch, and slightly raised above the skin. A vesicle becomes apparent to the eye about the fifth or sixth day, and the pimple enlarges. It is now circular in form, with its center depressed and edges raised, and it is sometimes indented by one or two concentric furrows, resembling a worm coiled under the skin. The depressed center is characteristic.

It increases gradually until the tenth or eleventh day, to the diameter of about four lines. The size varies; for if two or three punctures have been made near each other, two or three vesicles form, which coalesce and run into each other. The color of the vesicle is at first a light pink, which changes to a pearl color. The center is darker than the margin, which is swollen and shining. The vesicle consists of a number of little cells, filled with a clear lymph, and these cells communicate with each other.

On the eighth or ninth day an inflamed ring forms round the base, which, on the tenth, is from one to two inches in diameter. This areola is red, hard, and swollen. The redness continues for a day or two, then begins to fade, generally from the center to the circumference, sometimes forming two or three concentric rings.

After the tenth day the vesicle declines, the center becoming brown, and then a hard, smooth crust, of a dark mahogany color, forms, having a concave surface.

About the twentieth day the crust falls off, leaving a permanent circular scar, a little depressed, and marked with small pits, as numerous as the cells were of the vesicle.

The general symptoms are very slight—restlessness, shivering, thirst, headache, peevishness, drowsiness—but they are of no consequence.

Some make several punctures, in order to secure the effect; I rely on two only—one in each arm; but am very particular as to the selection of the virus, and in the examination of the child to be vaccinated; for I make it a rule to postpone the vaccination if

a tooth be coming out, or if there is any eruption on the body, or a diarrhea, or evidence of any irritation in the body anywhere; for if there be, I believe the patient will not be secure from small-pox. The most favorable time for vaccinating is between the ages of six weeks and two months; the late Dr. G. Gregory recommends the fourth month, but always before teething begins. This period is prior to the period of teething, and subsequent to the extreme irritability of first infancy; but we may vaccinate, without risk, immediately after birth, if small-pox be near at hand.

And with respect to the state of the pustule, that is, to the day when we may take lymph from it, it is now generally agreed that we should open the vesicle on the eighth day, or even a day or two later, provided the margin or areola, previously described, has not appeared.

We may preserve this lymph by receiving it on a small square of glass, which we allow to dry; then covering it with another similar square of glass, fold both up in a piece of moistened bladder or gold-beater's skin. For more immediate use, the lymph may be taken upon thin-pointed blades of quill or ivory; these should be charged with lymph two or three times, being allowed to dry between each charging, and then inclosed into a packet with gold-beater's skin.

Another way of vaccinating is by the cow-pox crust, which is perhaps more certain than either the glasses or points; this crust is probably the actual lymph in a concentrated state; the crust must be kept dry, in a well-stopped phial. The surest way of vaccinating is by having the two children in presence, and doing it at once; if not, the lymph may be carried on the lancet's point for a few hours—three or four, but not longer. The crust is the next best.

Great anxiety is naturally felt as to the protection afforded from small-pox, and as to whether the constitution has been sufficiently affected by the lymph; and Dr. Bryce has discovered a test, which was at one time almost constantly put in practice. He found that "if during the regular progress of cow-pox, a second inoculation or vaccination be performed about the end of the fifth, or beginning of the sixth day after the first operation—that is, between thirty-six and forty-eight hours before the areola or margin of the first begins to appear—the affection produced by this second inoculation will be accelerated in its progress so as to arrive at

maturity, and again fade at nearly the same time as the affection arising from the first inoculation, and that this will take place although the constitutional affection be so slight as to otherwise pass notice." So that we must take some lymph on the fifth day after a vaccination, in which all is going on in the regular course, and insert this lymph into the opposite arm in one or two places, and we shall see that this second operation will be followed by a minute vesicle on the third or fourth day—that is, on the eighth or ninth from the date of the first—which vesicle will be immediately afterward surrounded by an areola, and will become, on the fifth day of its own existence, an exact miniature of the first on its tenth day; both will have finished their course at the same period, that being usually the thirteenth day from the first inoculation, and eight from the second. Dr. Maunsell, from whom this description is taken, says: "The rationale of the acceleration, which thus takes place in the second vesicle, may be explained in a few words. The phenomena (circumstances) of the ordinary cow-pox before the eighth day, or, in other words, until the appearance of the areola (inflamed margin), are strictly local; when this appears, we may look upon it as a visible sign of the specific fever (or, perhaps, we should rather say action) being in operation in the system; and as a consequence of this general action, we find that a specific areola appears around any local vesicle of the same disease that may at the same time actually exist upon the surface of the body, although that vesicle may not be in existence sufficiently long, according to the known laws of the disease, to be itself the cause of this phenomenon. The latest period at which we can expect this test to succeed is from thirty-six to forty-eight hours before the appearance of the first areola, as it is necessary that the secondary affection may have proceeded some length, and that a small vesicle containing virus (lymph) may have been formed by it before the constitutional action from the first inoculation begins; otherwise no areola, but merely a slight degree of hardness, will take place from the second puncture. We defer it to the latest period in order to afford the strongest possible contrast between the progress of the two inoculations.

"This test-plan should always be tried, though we must not assume that all is wrong if it fail, since from unskillfulness in the operator, or from some accidental friction, which no one will own, the second vaccination may not take effect at all.

"But neither first nor second vaccination may take effect, from some peculiarity of constitution, rendering the child insensible to the action of the lymph; then, after a second unsuccessful trial, we must leave the child to its chance for six or seven years, when some change may have taken place, and the vaccination then become successful.

"Dr. Sonderland, more than twenty years ago, proved the identity between the contagion of the cow-pox and that of human small-pox; and that cow-pox in the cow is simply small-pox in man, and may be produced in that animal at will by the variolous contagion. This would explain the protective power of cow-pox. They are merely modifications of one another. All previous uncertainty with respect to the ceasing of the protective power, and to the degeneration in quality of vaccine matter, must now cease. Dr. Sonderland says no disease in the gaseous form can thus be communicated to the lower animals with advantage; perhaps a protective measure may thus be discovered ultimately against other diseases, as scarlet fever, measles, yellow fever, and plague, each specific poison being modified by passing through the system of an animal."

If this be true, a great desideratum in this disorder would be gained.

Dr. G. Gregory recommends revaccination at the interval of one, two, or three years, if Bryce's test have failed, or the cow-pox itself has not been satisfactory; he recommends five places to be inoculated, and says the lymph of a fifth-day vesicle never fails.

Until the eighth day the constitution does not seem to sympathize; nor even then, in most cases. There may be restlessness, disordered bowels, heat of skin, and disturbed night's rest, but medicines are seldom necessary.

The irregularities or anomalies of cow-pox are numerous. In some cases a red, itching vesicle is formed, is rubbed, and a small needle-shaped or conical-shaped pustule is formed; the areola is irregular, and the lymph is not transparent. The surrounding scab is small, and drops off prematurely, instead of dropping off between the eighteenth and twenty-first day.

A perfect vaccine scar should be small, circular, and marked with radiations and indentations; but many scars disappear as life advances. But if all has gone on right to the eighth day, the virus

has taken full effect, and all that happens afterward is immaterial in respect to the security of the child. So the scar left is not to be depended upon as evidence of security. The scab leaves an ulcer sometimes, when the pock has not been of the true kind.

With respect to the vexed question of the failures to protect in the vaccine lymph, it is now agreed that, whether from idiosyncrasy (peculiarity) of constitution, or some other cause, small-pox has repeatedly occurred after vaccination; but still the benefit derived in the vast majority of cases is incontestable; nor have I encountered one fatal case of small-pox after cow-pox, though I have heard and read of some, yet I have had under my care several instances of confluent small-pox after vaccination, where the symptoms were violent and threatening in the earlier period; but I have found the usually dangerous secondary fever either omitted altogether, or else rendered very mild; nor have I ever seen any one scarred after the attack; and my confirmed opinion is, that it is next to an act of madness to reject the almost certainty of benefit and protection to be derived from vaccination on account of a few isolated cases of failure.

Still, I am not averse to the practice of revaccination, about the ages of seven, fourteen, and twenty-one, if it were considered desirable by any persons who may have misgivings about their being sufficiently protected from small-pox.

When the first instances of small-pox after cow-pox were published, a reaction arose in favor of the old practice of inoculation with small-pox virus, but I trust there are few to be now met with who would prefer this latter to vaccination. And to those few I would suggest that the inoculated small-pox at times proves both severe and fatal, whereas this can never be alleged against vaccination; and I would also suggest, that, by inoculating with the small-pox virus, danger is incurred, not only by the person inoculated, but by all who may live near or come in contact with the patient, while the dangerous disease is propagated, and so might become fatal to many.

TINEA CAPITIS—RINGWORM.

This is an inflammation of the hair follicles, which produces a peculiar yellowish substance, surrounding the cylinder of the hair, and is seen through the outer skin as a minute circular spot, not

raised above the level of the skin. This yellow substance escapes from the follicles of the hair upon the surface of the outer or scarf skin, and dries into yellow friable crusts, forming a distinct cup, with an inverted border, around the base of each hair. When many of these cups join together, they resemble the cells of a honeycomb.

The first intimation of the coming mischief is in the appearance of the hair on the diseased spot; it becomes thin, discolored, twisted, and is at last thrown off, in consequence of the disease extending to the deep-seated structure. The spot is left bald, and the disease has probably involved all the textures down to the bone.

The scalp is the chosen site, but the disorder may extend to the face, neck, and body. It is highly contagious, and easily communicable by contact.

Children are usually the subjects of this disease, and such children are often of an inferior degree, or of stunted intellect. If the irritation continue long, the glands in the neck swell, a weakly and unhealthy system and a scrofulous taint predisposes, and the disease, if uncured, may last for years, and cause serious damage.

Contagion is the exciting cause, and towels, combs, brushes, hats or caps afford a ready means of propagation, especially in large schools, where the greatest difficulty is found to eradicate it.

The yellow substance in the crust, it is said, has been proved to be an organic structure of simple growth, and resembles those inferior members of the vegetable world denominated mold. The name of mycoderm has been given to this parasite; and its organization is supposed to be vegetable, because this mycodermis consists of a number of cells, capable of extending themselves by the ordinary process of multiplication. But the truth is, that the vesicular organization is common to animals as well as to vegetables, being the only form that manifests itself at an early period of development in either kingdom. And Professor Carpenter deems it an arbitrary assumption to speak of this disorder as produced by the growth of a vegetable within an animal body. The parasitic growth has roots and branches, smooth, cylindrical, and transparent little tubes; its roots are attached to the yellow capsule; its stem and branches extend inward toward the center of the capsule, and constitute the whitish-gray and porous contents of the crust. Although the mycoderm may not be of vegetable origin, it is a structure of a low type.

Other diseases may be mistaken for this; but we must look to the cup-shaped crusts, of a bright yellow color, and dispersed; but the most characteristic appearance, and one which distinguishes it from all other diseases of the scalp, is the discolored, dry, and twisted appearance of all the hairs, arising from the diseased follicles. On examination, these hairs will be found quite loose, if gently drawn by the forceps.

Treatment.—We must do our utmost to cure and prevent this disease; and the first and chief point to look to is, to see that in schools, or anywhere else, a perfect insulation be maintained of the affected child, and care taken that towels, caps, etc., shall be used solely by the patient. Some public schools have been infested for years with this complaint, which has at last been rooted out solely by great watchfulness and organization.

The general remedies are those adapted to elicit high tone and vigor, and they need not be detailed.

The local applications have been numerous, in proportion to the continual failures; but Dr. Wigan proposes a remedy, which he says has never failed in curing, if rightly applied, and which, also, has the additional advantage of acting as a detector of this disease in its early stage, when it is most important to treat it, since we have already said that when this disease has existed long, the whole of the scalp, down to the very skull itself, becomes affected, and the disease incurable.

I have verified the statements of Dr. Wigan, and have watched with much interest the progress, amendment, and cure of many a case of ringworm in a very large public school; and I have also seen the application used as a detector with great success. It appears that Dr. Wigan, had been, as many of his compeers, baffled in his treatment of this obstinate disorder for many years, until, at last, he made the discovery of a cure. He having successfully tried the remedy, printed many circulars, and distributed them freely about.

When we reflect on the hitherto intractable nature of this contagious and tedious disease, and on the farrago of remedies which has been boasted of by different practitioners, we shall be delighted to try the following mode of curing this affection:

The disease should first be identified with a powerful lens, as many mistakes have been made. Scaly tetter (psoriasis), and several other disorders of the scalp may be mistaken for ringworm;

but the mode of distinguishing the ringworm from all other eruptions of the scalp has been related.

If, then, we find there is any concomitant disorder with the ringworm, it must first be removed; then the head must be shaved, except a few locks of hair in front, if desired. If any razor-cut have been inflicted, it must be healed before we go further; then apply, by means of a short, soft shaving-brush, all over the head, strong pyroligneous acid, diluted with one-third its volume of distilled water. I have seen it used undiluted, but the application is rather a sharp one. Keep the head wet with it for two minutes, when slight and transient pain will be felt at the diseased spots, which are immediately rendered visible, though they could not previously be distinguished. These spots become of a very bright red, while the healthy scalp is not at all affected, unless in particular instances, where the skin is fine and delicate; for, in such habits, the stimulus of the acid causes universal reddening; then the acid should be tried again in a more diluted state.

Every spot is thus detected, and the extent of the disease ascertained.

A second and a third application, with intervals of three or four days, will complete the cure; but we must soak the parts with the acid for fifteen minutes, or else gently rub it in. Once doing so is sometimes sufficient. A thick scab is generally the result of this process, and this scab should not hastily be removed. In seven or ten days, the scab rises from the scalp, supported by the new hair; then introduce a fine pair of scissors under it, and cut it off, when the skin at the bottom will be found clean and healthy. Examine by the lens, and if there are any yellowish spots, or any suspicious appearances, repeat the application of the acid. We should likewise examine the state of the hair around the patch, and indeed all over the head; if any are loose or altered in appearance, the disease is there. When the hair is very thin on any point, we must apply the detector acid.

These applications of acid should be done by a medical man; but if there be no one at hand, any tolerably clever person may apply them, by attending to the foregoing directions.

Ringworm on any other part of the body than the head never requires more than one application for its cure. The most embarrassing cases are those which have been under professional care, and where many irritating ointments, etc., had been pre-

scribed. Here the irritation must first be subdued before we try the acid—poultices, hot or cold, gentle aperients, waiting a few days.

If on the first examination (after the test of the acid) there be found only a single spot of slight extent, to prevent contagion, touch the spot with *kali purum* (caustic potassa), so slightly as to give no pain. This is effectual; a slight scar is formed, and when the slough separates, the hair will not grow again for some time; but there is no fear of its being reëstablished in a few months, and in the mean time all apprehension is at an end.

Dr. Wigan's detector acid is the concentrated pyroligneous acid, diluted with three times its weight of water. On its application, a number of spots, which looked perfectly healthy, become red patches. They are indications that infection had been taken, but had not gone through its stages, which period he (Dr. W.) believes to be, after great experience, eight days.

Having thus ascertained the numbers and position of your enemy, your course is clear. One vigorous assault, and there is an end of the matter. With a piece of fine sponge, either tied to the end of a stick or held in a pair of silver sugar-tongs, each spot is to be thoroughly imbued with the concentrated acid for the space of three or four minutes, and the business is finished.

The only reason for seeing the patient again is, that a crust forms, and an appearance of worsening takes place. This crust is pushed up with the hair, which soon sprouts again if the eruption be recent; and as soon as a fine pair of scissors can be inserted underneath, it should be removed, but not prematurely, lest a sore place be formed. More than one application of the acid is seldom necessary, when the above-stated preliminaries have been properly gone through on the shaved and tested head.

The acid must not be continued too long, or the disease of the doctor will be produced; namely, an inflammation and eruption caused by the remedies applied. Then discontinue all applications.

For general treatment, nutritious, non-stimulant diet, with perhaps a grain of calomel at night, once a week or so, with a gentle aperient next morning, will be all that is necessary.

The infant may labor at birth under certain morbid conditions, or it may suffer from accidents or from diseases peculiar to this period of their lives, or modified by circumstances peculiar to that

period. The young mother should know something about them, although many of them can only be remedied by the surgeon and accoucher. We therefore proceed to describe some of those states.

STILL-BORN CHILDREN.

Here the child may be born with no indication of life, except perhaps the pulsation in the navel cord, or a feeble action of the heart; or there may be ineffectual efforts at breathing, or the child may even cry faintly, yet strength may be wanting to establish the breathing.

Much may be done to restore the life so nearly lost; for we know that the heat of the new-born child is about three degrees less than that of the adult; hence it can exist longer without respiration, wherefore nothing short of the most positive indications that the infant is dead should prevent us from persevering in our efforts to restore life; and these efforts should be continued as long as the slightest attempt at motion of the respiratory organs is evinced, or the slightest pulsation of the heart continues.

We observe the still-born infant under two conditions—one in which it is evidently feeble, mouth open and flaccid, limbs relaxed, and cord beating feebly or pulseless; or the other, in which the child is of full, large plethoric habit, the face swollen and purple, the cord tense and beating strongly, as if there existed a state of apoplexy.

Our treatment must vary according to these two states. Our first object is to remove all impediments to the passage of the air into the lungs. We place the child with mouth uncovered, and pass our finger into the back part of the mouth, so as to clear the passages and excite the respiratory efforts.

The chest should be gently rubbed or slapped, and exposed to the cold air; then the chest and soles of the feet must be rubbed with spirits, and the nostrils irritated with a feather, dipped in the spirits, or by holding the carbonate of ammonia (smelling salts) to the nose. The cord should not be tied and cut unless respiration be established. If the child be of full habit, and of swollen purple face, the circulation should be relieved by cutting the cord and allowing it to bleed. Two other means of resuscitation are put into requisition, which are inflation of the lungs and the warm bath.

The inflation should be done very gently indeed, and the air should not be cold. Dr. Maunsell recommends that the operator should inflate with his own lips, and then gently press the chest, and repeat, so as to imitate the process of breathing.

As to the warm bath, respiration may be set going, and a cry uttered immediately upon plunging the child into a bath of 100 degrees of temperature. If motion be produced, withdraw the child, and rub with dry, warm flannel. By keeping the child in the bath the air is excluded, and the temperature so raised as to render it less capable of bearing the deprivation of air.

Should the child continue to breathe feebly, and show an inability to suck after animation has been restored, we must excite by friction on the surface; we may stimulate the bowels by some castor-oil; and if there be much rattle in the breathing, one gentle emetic may do good service.

DEFORMITIES

sometimes exist, but these must be left to the surgeon; and some of the natural apertures may be closed, leading to a retention of the contents of the bowels or bladder.

Some children are born with a round, compressible tumor on the lower part of the spine, varying in size from that of a nut to that of the closed fist. All the mother can do is to protect the swelling from pressure.

TONGUE-TIED.

Here the bridle to the tongue extends too near, or to the tip of the tongue, and the child can not suck.

If the tip can be protruded beyond the lips, there is no tongue-tie. Where the tongue is tied, the bridle requires to be cut sufficiently; but this seemingly trifling operation has been followed by serious events.

HARE LIP.

If this do not impede suckling or threaten life, it should not be operated on in early infancy.

Deformed feet, and supernumerary toes or fingers, are met with. Operations should be postponed.

Mother's marks come under the surgeon's attention.

Ruptures, also ; and they are only mentioned to give notice that such may exist.

Injuries are often received during birth. Great blue or blackish swellings may be visible, but they should not be meddled with, never opened, but some of the discutient spirit washes applied, which are prescribed elsewhere.

The bones of the limbs are sometimes broken during birth, but the same treatment may be applied here, as in that of fractures in general.

Palsy of the limbs may be induced by the use of the blunt hook during delivery ; here nothing can be done.

THE BLUE DISEASE—CYANOSIS.

The right and left cavities of the heart should, after birth, have no communication with each other, except through the lungs ; and a hole, which used to be open before birth, and which is a communication between the right and left cavities, ought to close after birth. In some cases it does not ; and then the child's lips, cheeks, and nails are of a blue, purple, or leaden color, the skin is colder than it should be, and fits of difficult breathing come on, causing the blueness to deepen in color, the pulse to stop, and the feet to become cold.

The child may recover frequently from these fits, but usually dies in one of them. The fits are caused by any thing which hurries the breathing or pulse.

This disease may depend on the hole above alluded to being open, thus allowing the blue venous blood to mix with the bright arterial red blood ; still, cases of blueness have existed where there has been no open hole, and there has been no blueness, where the hole has remained open. There must, then, be some other cause or causes—causes which produce imperfect filling of the lungs.

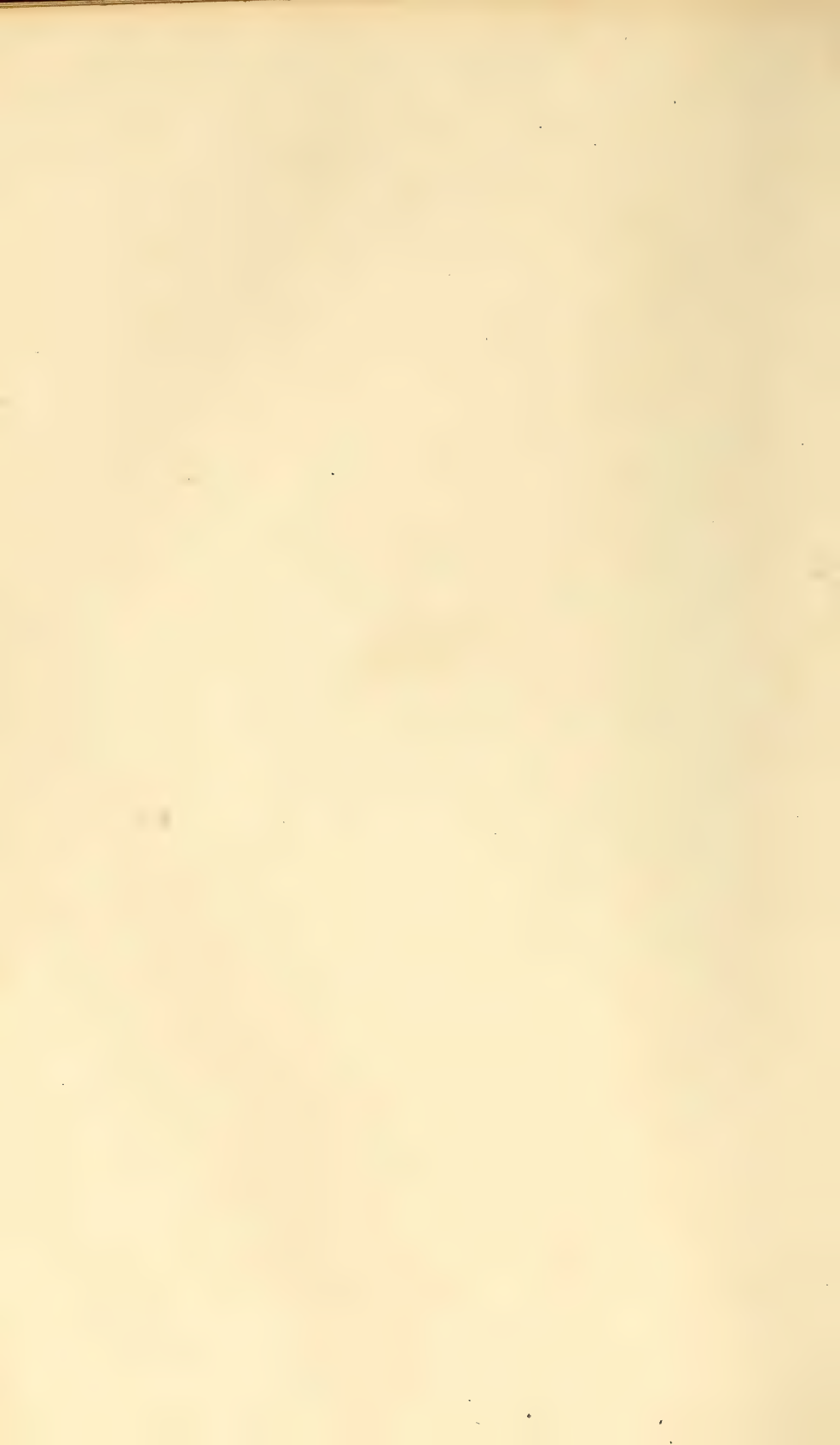
As to treatment, nothing can be done where the hole is still open ; and the subjects live a longer or shorter time, then die. Morgagni tells us of a girl who lived to her sixteenth year, with a hole open large enough to admit the passage of the little finger through it.

As to the other causes, we must do as recommended for still-born children, and, during the fits, expose freely to cold air, sprinkle cold water on the face, etc.



Engraving by J. G. Thompson from a daguerotype by J. M. Smith

Valentine, Gott.



NINE-DAY FITS—TRISMUS NASCENTIUM.

In the West Indies and some tropical climates this is a very fatal disease.

Within about nine days after birth—about the time the navel cord falls off—fits occur, called by nurses “black fits and white fits.” The first often kills in from eight to thirty hours; the second may continue three, five, or nine days. There are sometimes warning symptoms—starting during sleep, a livid circle about the lips, puckering of the mouth, peculiar screeching, a smile during sleep. The stools may be regular and natural, or greenish, slimy, knotted.

When the fit comes on, there are violent, irregular actions of the muscles of the limbs and face, recurring at uncertain intervals. In the black fits the spasms are more violent; there is foaming at the mouth, thumbs turned into palms of the hands, the jaws closed, and any attempt to open them adds to the spasms; the face and body swollen, and of a dark copper color; during the intervals the muscles are stiff.

In the white fits there is less violence; the face is pale, and the body becomes quickly emaciated. Both are equally fatal. Such is Dr. Maunsell’s excellent description.

Treatment.—Here nothing satisfactory has been established, since the cause has not been agreed upon, some referring to the state of the navel, others to other causes. We, however, have reason to think that free ventilation and perfect cleanliness act efficiently as preventives. Dr. Brien gives us some hope from administering the eighth of a drop of laudanum every second hour, until the effects of opium are produced—drowsiness, cessation of the spasms—and a grain and half of calomel every fifth or sixth hour up to the third time, with, intermediately, a large-sized tea-spoonful of castor-oil, sometimes joined with a third part of spirits of turpentine. The warm bath has done no good.

ERYSIPELAS OF INFANTS.

This disease generally appears about the navel, but sometimes on the limbs and joints, as the ankle and wrist.

Considerable danger attends on this affection, for it quickly runs into gangrene or the formation of matter. The concomitant fever is almost always typhoid. A dark red, shining spot first appears.

which assumes a purple color, without much swelling; the skin is hard; bladders are formed on the belly, and gangrene follows, which sweeps away a great part of the skin, and extends low down, destroying the parts in its course. Offensive, slimy stools, with great restlessness, and, at last, coma.

It may attack immediately after birth.

The issue is very doubtful, and would be altogether hopeless, were we not acquainted with the strong hold on life possessed by an infant, and with the wonderful efforts at reparation of injury of which it is capable.

Treatment.—To change the air should be almost the first step; then the milk must be looked to, if the mother secretes enough or not, or whether the milk is good, the mother healthy. If not, a wet nurse must be procured. If the child can not suck, give a teaspoonful of white wine whey every hour or half hour. A gentle aperient must be given, and after this has operated, a quarter or a third of a grain of quinine, every three or four hours, with as much aromatic powder. Ammonia is recommended by some.

Dust the part with starch powder or common flour, and if matter is forming, or gangrene threatened, foment or poultice with light bran, chamomile flowers, or the fermenting poultice.

ABSCESSSES

sometimes form in the armpits, neck, or lower part of the leg in infants. A tumor forms, not painful, which becomes red, and a soft spot is observable. On letting the matter out, the abscess soon gets well, and little or no general treatment is requisite.

INDURATION OF THE CELLULAR TISSUE.

This disease attacks prematurely-born or feeble children, in whom the breathing has not been fully established, and commences usually in the feet, which become swollen, dry, hard, and cold. The skin may be of the natural color, or it may be livid or purple. The skin appears as if tightly stretched over the parts; it is cold and hard, and pits but slightly on pressure. The disorder invades the body, the temperature of which is remarkably diminished. There is no attending fever. The child is restless, will not suck, and whines in a way which may be compared to the crying of mice.

The breathing becomes more and more difficult, until death supervenes, usually within the fourth day, but sometimes so late as the second or third week. We can entertain but little hope of recovery.

Treatment.—Congestion and accumulation of black blood in the large veins and large internal organs explain the coldness of the surface, and the effusion into the cellular membrane.

Friction with warm flannel, and an emetic of ipecacuanha, to clear the air passages, should be tried; then give stimulants, such as warm white wine whey, ammonia, etc.

JAUNDICE OF INFANTS—YELLOW GUM.

Yellowness of the skin and whites of the eyes is very common with infants two or three days old; and this may depend on the active secretion of the bile, and of more being formed than is necessary. This will disappear without any medical treatment; but when it does not go off in three or four days, we should give a teaspoonful of castor-oil, and one grain of gray powder, with two or three of rhubarb.

PURULENT OPHTHALMIA OF INFANTS.

This disorder not unfrequently causes loss of sight, and often gives considerable anxiety to the medical man, until he is able to obtain a sight of the cornea (the central part of the eye); for the cornea may become opaque, or it may be destroyed by what is called sloughing (gangrene). The disease sets in on the second or third day after birth, and the white of the eye becomes red, the eyelids swell, and matter rapidly forms; but, very commonly, the first we see of the disease is two prominent bags of eyelids, which we can not separate, or if we can, severe pain is felt. Thus we can not see the cornea, which, moreover, always turns upward out of sight when the eyelids are opened. Light gives pain.

The causes may be cold, or it may be that the eyes have been irritated during birth by certain acrid secretions or discharges in the passage of the mother.

Treatment.—Some apply a leech or two, but we had better avoid doing so unless the inflammation is violent and the child strong.

We should at once resort to astringents—6 grains of alum to an ounce of rose-water, or three grains of sulphate of zinc to an ounce

of rose-water. Some highly praise dropping into the eye, three or four times a day, a solution of nitrate of silver (lunar caustic), consisting of ten grains to the ounce of distilled water.

Every hour we should drop from a sponge, or throw in from a small glass syringe, some lukewarm water or chamomile tea; and without doing this, all else may be ineffectual.

When the inflammation is severe, a cold poultice of bread and water, applied in a muslin bag, between the washing, etc., will help materially. Gentle aperients now and then.

If specks remain on the cornea, they are often absorbed in course of time.

RED GUM—STROPHULUS.

Three or four days after birth, a few red pimples appear upon the face, neck, and hands, and there are diffused red patches interspersed. The redness varies in depth of color. No treatment is requisite; and some nurses like to see the red gum; it merely indicates a healthy state, and sensibility of the mucous membrane and of the integuments.

The red gum sometimes attends dentition.

SWELLING OF THE BREASTS OF INFANTS

is frequently to be met with, and need not be mentioned here, since no treatment is requisite, either local or general, were it not for the practice of nurses to set to and squeeze out all the milk, as they say. This they do until they have caused inflammation to be excited, which is often followed by an abscess, that is, the formation of matter.

The mother should not allow the child's breasts to be meddled with in any way; the swelling will speedily subside.

WHOOPING-COUGH; OR PARTUSSIS.

This is a contagious disease, known by frequent fits of coughing, in which the breathing is broken, with great difficulty in drawing in the breath as well as expelling it. The inhalation is long, and produces a sonorous or croaking sound. The disease may be divided into three stages. The first begins like a common cold, but a little more severe; the second is the spasmodic stage;

and the third the declining stage. The limits of these stages are not well defined, nor do they always show themselves, as the disease sometimes runs its course without any perceptible change in this way.

The whooping-cough generally begins like a common cold, with increased discharge from the nose, with redness of the eyes, and a watery discharge from them, accompanied by sneezing, irritation of the throat, a dry cough, and occasional fever. The observer will find that the cough nearly always comes on more in paroxysms than in common cold, and the face is more flushed. At the end of ten days, or two weeks, there is, generally, a decided change; the paroxysms become more distinct, the whooping attends every spell of coughing, and the face is more flushed and swollen. These fits of coughing are not generally very regular in their periods, though sometimes they are quite so, and from occurring every hour, or even oftener, they gradually, as the disease advances, become less frequent, until they cease altogether. When they do become so unfrequent that there are but three or four spells during the twenty-four hours, the patient may, generally, be considered safe. But these observations only apply to the disease in its regular course, which, indeed, is the one that is mostly found in practice. We, in fact, find that only a very few cases need medication. Children run about without regard to weather, and generally escape all difficulty. This, however, is not always the case, as we occasionally find stubborn cases which call for practice less or more energetic.

When the whooping-cough occurs in damp or cold weather, or both at the same time, there is more danger than when the weather is warm or moderate in temperature; for, in these latter conditions of weather, children do better than in the former. It is during the first two weeks of the disease that there is most danger, because, in this period, inflammation is more apt to occur. If the child be plethoric, and is predisposed to colds, it may, during this period, become seriously affected by bronchial irritation, or even inflammation of the air-tubes, or it may have inflammation of the brain or its membranes, and be lost in this way; but that which is most to be dreaded is congestion of the lungs, or inflation of them and the membrane surrounding them, which last is called pleurisy. These conditions of the lungs, and the pleura which surrounds them, is known by the very frequent breathing of the child, and

moaning, with an effort to cry, every time the child strives to draw a deep breath. The skin, too, is dry, and the pulse too fast and too hard. The coughing, under these circumstances, gives great pain, and when the air-tubes are affected by inflammation, the disease is still more grave and painful. The face then becomes, when the patient coughs, more deeply flushed, and more of a lived color. If these symptoms come on during the first stage, it may be considered that the second stage will also be of a grave character, and will need all the skill of the physician to carry it safely through to the concluding stage, and still have difficulties to contend with during that period. After the patient has gotten through the first four weeks of the disease, without any unfavorable symptoms having occurred, it may be concluded that the worst is over, and that two weeks more will, in a great measure, terminate the disease, though it very often takes two months to effect a cure, and sometimes much longer; for often, for months, the sufferer will have, on every accession of cold, a return of whooping at each spell of coughing. Indeed, these severe returns sometimes last for many months.

The whooping-cough is a disease which is much more fatal in northern than in southern countries, and worse in damp climates than dry ones; hence the great mortality in England, and especially in London, when compared with the United States. There the mortality doubles that of this country in the same number of patients.

It must be recollected that the whooping-cough is especially connected with early life; but this is not always the case, for we occasionally meet with it among adults; and this is particularly so in sparse populations, where children have but little opportunity of taking it. Within a few years, I attended a lady in confinement, who was thirty years of age, and who, within five minutes after the birth of the child, whooped severely, and continued to do so for several weeks. This lady had had a cough for some weeks before confinement.

Treatment.—At the onset of this affection, but little is necessary; indeed, in a great majority of cases, no medicine is necessary further than that the bowels should be kept regular by a little rhubarb or castor-oil, that is, if they be costive; and the child should wear flannel next the skin, and be protected from severe cold, and from exposure to wet or rain. Should it take cold, and the breathing

be hurried, and attended with fever, an emetic should be directed of ipecacuanha. To a child two years of age, two grains of this medicine, in a little sweetened water, may be given every ten minutes, until vomiting is brought on; then a little warm drink may be given every twenty minutes, to promote the action of the medicine. Should this simple course not relieve the difficulty of breathing, it will then be proper to give a purgative of one grain of calomel and five of jalap, every two hours, until the bowels are freely opened. In the mean time, a warm bath, continued during a few minutes, will be useful. If now the child has lost the fever, and the cough has become easy, it may be allowed to return to its usual habits, but without exposure. The nurse will find, by placing her ear to the chest, whether the breathing is natural or not, between each spell of coughing; and when it is found not to be unnatural, there is no cause for alarm; but, on the contrary, if there be quick breathing, with some rattling, when there is no cough, it will then be right to call a physician, and let him direct the proper course; but if this be out of the question, then dissolve a grain of tartar emetic in two ounces of water, and give one tea-spoonful every four hours, as long as the patient can bear it, or until there is a mitigation of the symptoms; then it must be discontinued. It is a good way to put the tartar into sixteen tea-spoonfuls of warm water, and give a dose with the same spoon, as often as directed. Very often half a tea-spoonful will be found as much as the patient can bear, and the quantity may be given at bedtime, with two drops of laudanum, or ten drops of paregoric, for several weeks, with great advantage. The dose must be made much less for very young children, and but seldom increased, until after the patient is more than six years old. In mild cases, it is, however, better to give the ipecacuanha, in emetic doses, once or twice a week, as this medicine never weakens the powers of the stomach. When the child is restless at night, there is no medicine so good as Dover's powders. A child two years old will bear two grains at bedtime, and, should it not have the desired effect in two or three hours, one more grain may be given. The effect must be watched, so as to increase or lessen the dose, according to the impression made by the medicine.

As the disease advances into the second stage, there is more of the spasmodic tendency than before, because, in this stage, we nearly always find the peculiar noise called whooping, and that condition which sometimes terminates in fainting and convulsions.

To manage these cases, and this stage of the disease, it requires a different treatment from that of the first condition, where the whooping is little, and there is slight disposition to convulsive action. The same attention, must, however, be paid to the bowels and general system. It is in these two stages that the inflammatory tendency occurs, and it is with these that we have most to do, and in them the greatest danger lies. They are known, as has been stated, by fever-pain in the part affected. If in the brain, there is first pain in the head, intolerance of light, rolling the head on the pillow, and sleeplessness, and either contracted or dilated pupils; the contraction first, and then the dilation. When the chest is the seat of the difficulty, the breathing gives pain, the cough is severe, but the whooping less; and when the inflammation is fixed in the abdomen, there is tenderness in that part by pressure, and pain, with restlessness. Now, these symptoms must, in nearly every case, be combated by depletory measures. If the patient be stout, and advanced over two years, he should lose blood from the arm, which will mostly be of great advantage; then his bowels must be moved with two or three grains of calomel, and as much Epsom salts as shall be necessary. One tea-spoonful, dissolved in water, may be given every hour or two, until it acts on the bowels. If the suffering be confined to the chest, fomentations with hot water and flannel, or hop-water, should be kept on the chest steadily for some time. There should be calomel in one-grain doses, with Dover's powders, given every few hours; and if there be little danger of weakening the stomach, the twentieth of a grain of tartar emetic, with the eighth of a grain of opium, or less, owing to the age of the child, should be preferred. Should the excitement not yield to the first loss of blood, leeches or cupping should be resorted to. Most of these inflammatory cases will yield to this treatment. When the brain is the seat of the irritation, cold water may be used on the scalp, or even ice, in a bladder, may be applied with safety; and when the inflammation is thus located, leeches applied to the temples will be of the greatest use. When the bowels are the seat of inflammation, calomel and opium must be used more fearlessly than when in the parts mentioned. But see the treatment of inflammations of these parts under the proper heads.

We must always recollect that the whooping-cough, generally, is a disease that has a definite time to run, and that it can not be cut short by medication, unless, indeed, it outruns its usual length,

when we may have it in our power, by a proper course, to shorten its morbid continuance. These consequences, growing out of the debility produced by the severity of the disease, or the weakness of the constitution, have to be treated by those means that will regulate the bowels, soften the skin, mitigate the cough, act on the secretions of the liver and kidneys, and increase the general strength, and produce appetite. Now, to succeed in all these requirements, we must give the patient a warm bath once a day, clothe it with flannel, use gentle friction on the limbs, and expose the child to fresh air, even in winter, the last only for very short periods. The sick chamber must be kept warm but well-ventilated, and the patient must be allowed to exercise within doors as it wishes, and it will be found that a change of rooms will be beneficial in many cases. When the cough, in this latter state of the disease, is troublesome, Dover's powder at bedtime, graduated to the age of the child, will be of great use. Should this not agree, a few drops of the tincture of hyoscyamus may be used, and often with benefit. From three to five drops can be given to a child two years old, in a little sugar and water, at bedtime, and repeated as occasion may require. Another excellent anodyne is paregoric and tincture of assafetida, in equal portions. The combination may be given at bedtime, or several times a day, in the amount of ten, twenty, or thirty drops. The paregoric alone is a good anodyne, and is especially so when combined with an equal amount of syrup of ipecacuanha; twenty drops is about the quantity that should be taken at once.

If, in the course of the disease, the patient should faint or become insensible at the close of a paroxysm of coughing, cold water should be sprinkled on the face, and, between the spells, the assafetida mixture should be given every two or four hours. A teaspoonful will be the proper dose for a child three years old. This medicine can be given for some time, as there are no spirits in its composition. To bring about tone and appetite, tonics must be given, and those which will irritate the stomach the least should be preferred. Quinine, in half-grain doses, will be found among the best remedies for this purpose; next, a watery infusion of the Peruvian bark, with sulphuric acid, will be found best of all the vegetable tonics. The way to prepare this last, is to put an ounce of coarsely-powdered Peruvian bark into a pint of cold water, and add one drachm of sulphuric acid. Let this stand 24 hours, and

then strain through muslin, or filter through paper ; one tea-spoonful of this three times a day. The quinine can be given in powder or solution. It is sometimes proper to give the child iron ; this may be done by giving one grain of the carbonate of iron in syrup, three times a day. Very large quantities do no more good than small ones.

If the discharges from the bowels show a want of bile—that is, are light-colored—half a grain of calomel should be given every night until the color becomes brown. If there be costiveness, from two to five grains of rhubarb should be given with each dose of the calomel. But if there be diarrhea, then a grain of Dover's powder, with two of carbonate of soda, should be used instead of the rhubarb. This course must be persisted in until a change takes place.

CHAPTER VII.

POISONS, ACCIDENTS, FORMULARY, AND SPECIAL ADVICE TO
EMIGRANTS.

POISONOUS substances, it is well known, are often used as remedies, and with great success ; the quantity constitutes the chief difference in many cases.

POISONING BY STRONG ACIDS.

These acids are the sulphuric acid, or oil of vitriol, spirits of vitriol ; the nitric acid, or aquafortis ; the hydrochloric acid, or muriatic acid ; or spirits of salt, or muriatic acid.

Symptoms or Effects.—A sharp, sour, burning taste in the mouth, and a burning in the gullet and throat and stomach ; bitter stuff is vomited with some blood ; at times, vomiting ; frequent stools, and blood passes with them ; pain in the bowels, like colic ; great thirst ; tenderness of the belly, cold clammy sweats ; attempts to make water frequent and painful ; breathing difficult ; restlessness, pale face ; convulsions and cramps ; mind remains unaffected. Death may ensue in a few hours, or in several days.

Treatment.—Antidotes must be administered instantaneously, if possible ; much, if not all depends on time. Mix an ounce of magnesia in a pint of water, and give a wine-glassful instantly, and repeat every three or four minutes. If no magnesia is at hand, put half an ounce of soap into, and dissolve it, in a pint of water ; administer clysters of the same. Do not use the stomach-pump, on account of the inflamed throat, but give water, milk and water, barley-water, whey, gum arabic mucilage very much diluted, or linseed tea. Then the inflammatory state is to be subdued by warm bath, fomentations, leeches ; no food so long as pain and inflammation in the stomach continues ; then food cautiously.

OXALIC ACID, OR ACID OF SUGAR.

Symptoms not unlike those from the preceding acids.

Treatment.—Give chalk and water, magnesia, or break down some mortar from the wall, and mix it into a paste with water. Then encourage vomiting, by tickling the throat and gullet; or give an emetic—a tea-spoonful of flour of mustard in water, or two table-spoonfuls of common salt in water; but beware of giving much fluid until the acid has been neutralized by chalk, etc., which converts it into an insoluble matter, and prevents it from getting into the blood.

POISONING BY STRONG ALKALIES.

Fused potash; hydrate of potash, or commonly caustic potash; carbonate of potash, or salt of tartar; oxide of sodium, or caustic soda; carbonate of soda, or kelp, or barilla, or washing soda; oxide of calcium, or lime, quicklime; hydrate of lime, or slaked lime; solution of lime, or lime-water.

Symptoms.—A peculiar urinous taste in the mouth, acrid and burning, difficulty of swallowing, vomiting of matter mixed with blood; the blood which is thrown up turns vegetable blue colors green. Then come on sharp pains at pit of stomach and in the belly, symptoms of inflammation in the bowels, hiccup, clammy sweats, purging of dark, bloody matter; the mind wanders; exhaustion and death follow.

Treatment.—Put three table-spoonfuls of vinegar or lemon-juice into three or four ounces of water, and repeat the draught; or we may give freely of olive oil or almond oil, which would convert the alkalies into a soap; or the sulphuric or muriatic acid might be given; drop enough of either acid into a wine-glassful of water till it is as sour as weak vinegar.

Then barley-water, mucilages, gruel, milk, whey, linseed tea, jellies; then treat for inflammation by leeches, fomentations, etc., if necessary.

POISONING BY AMMONIA.

Solution of ammonia, or volatile alkali; sesquicarbonate of ammonia, or smelling salts, hartshorn, volatile salts; hydrochlorate of ammonia, or sal ammoniac, baker's salt, and muriate of ammonia.

Symptoms similar to those caused by potash, only more suffocating; convulsions and cramps are more frequent. When taken in small quantities, bleeding from the nose, mouth, or bowels may occur; the teeth drop out, and a fever like hectic may prove fatal.

When the vapor of ammonia is breathed too long, inflammation may ensue in the mouth, throat, and gullet, producing difficulty of swallowing, local pain, etc.

Treatment.—When swallowed, give vinegar or lemon-juice, citric or tartaric acid, in water; and give the remedy as soon as possible, for death has followed in six minutes. When the vapor has been inhaled, the fumes of hot vinegar must be inhaled. For any consecutive inflammation, the usual remedies must be adopted. (See Chapter IV.)

POISONING BY ANTIMONY.

Tartar emetic, James's powder, butter or muriate of antimony, Kermes' mineral, glass of antimony.

Symptoms.—Metallic taste in mouth, from some of these; vomitings severe; hiccough and heartburn; pain in the stomach, with griping, purging, and fainting; skin hot, sometimes deadly cold; cramps, convulsions, giddiness, difficulty of breathing.

Treatment.—The decoction, tincture, or tepid infusion of galls are the antidotes; a wine-glassful of the first and last, or a dessert-spoonful of this tincture in water; dilute freely; then empty the stomach by the stomach-pump, and any one can introduce the tube of this pump, by passing it gently down the back of the mouth, gullet, and throat. After this, give decoction of yellow Peruvian bark; check excessive vomiting with one grain of extract of opium in sweetened water; leeches, fomentations, etc., to pit of the stomach.

IODINE POISON.

Symptoms—similar to the foregoing, but the vomiting is not so excessive; the pain at pit of the stomach is severe.

Treatment.—Give mucilage of starch, arrowroot, or wheat flour in considerable quantity, until we may suppose the stomach nearly full; then give an emetic of ipecacuanha; and combat the inflammatory symptoms by the usual means.

ARSENIC AS A POISON.

White arsenic, oxide of arsenic, fly powder; Macquer's salt of arsenic, or arseniate of potash; orpiment, or king's yellow; Fowler's solution, or tasteless ague drop; arsenical paste.

Symptoms.—First, nausea and faintness come on; then burning or hot pain in the stomach; vomiting of greenish yellow matter, mixed with blood, after much retching, and increased by any thing taken into the stomach; swallowing difficult and painful; voice hoarse; griping pains, with purging of green, watery-looking matter; bearing down stools; belly drum-like and painful; skin cold and clammy; convulsions, palsy, and delirium.

If the arsenic has been swallowed in lumps, death often ensues in six hours or thereabouts, with prostration, faintness, stupor, and convulsions; and the vomiting and pain in the stomach are not severe.

In some cases the patient may live five or six days, or even recover, though this last event rarely happens; palsy or epilepsy, and locked jaw, with violent madness, sometimes occur.

Treatment.—The stomach must be immediately emptied by the stomach-pump, and we must use lime-water instead of distilled water; we must give drinks of tepid mucilages of sugar and water, chalk and water, and lime-water; but we must avoid giving alkalis. The best antidotes are charcoal, and the hydrated sesquioxide or tritoxide of iron.

The arsenic causes inflammation of the stomach, which must be treated in the usual way; and a diet consisting wholly of farinaceous food must be adhered to, till all pain and uneasiness are gone.

POISONING BY MERCURY.

Calomel, red precipitate, turbeth mineral, prussiate of mercury, vermilion, corrosive sublimate.

Symptoms.—A nasty metallic taste; dryness of mouth and gullet; vomiting, belching, hiccough; bloody stools; intense thirst; difficulty in breathing, swallowing, and making water; cramps; clammy skin; icy coldness of the skin and extremities; convulsions, delirium, and death in from one to three days.

Treatment.—Large quantities of white of egg—the whites of a dozen eggs, diluted in two pints of water—must be given re-

peatedly, till the stomach is full; or else a mixture of soap and the gluten of wheat flour; but if these are not at hand, linseed tea, sugar and water, barley-water, or other soothing drinks, should be given. Then apply the stomach-pump, and treat whatever inflammatory symptoms may arise.

COPPER AS A POISON.

Verdigris, or oxide of copper; blue stone, blue vitriol, or copperas verditer.

Symptoms.—Cooking in untinned copper vessels will cause this poisoning; or cooking in vessels with copper stop-cocks, when any acid or grease is present. The tongue is dry and parched; an acrid coppery taste; coppery belching; spitting; nausea, with often vomiting, or efforts to vomit; pain in the stomach, griping; purging of bloody stools, with straining efforts; belly painful and distended; heat of skin, with fever. These are followed by jaundice, weakness, faintness, difficult breathing, headache, scanty urine, cold sweats, cramps, and convulsions.

Jaundice is never seen in cases of poisoning from arsenic and mercury.

Treatment.—Dilute and mix the whites of a dozen eggs in two pints of cold water, and give wine-glassfuls every three or four minutes; or give draughts of syrup, of sugar and water, till the stomach throws up its contents. Then administer the albumen in smaller doses than at first, and treat the inflammatory symptoms as usual.

POISONING BY TIN.

Butter of tin, salt of tin, muriate of tin, putty powder, flowers of tin, worm powder.

Symptoms.—The salt of tin has been mistaken for common salt. Colic and purging. Taken in large doses, convulsions, palsy, and death are the effects.

Treatment.—Milk; warm or cold water must be given often; and magnesia should be mixed with the milk, or with albumen. For the colic, apply leeches and fomentations; for convulsions, give opium, as recommended against convulsions in poisoning from antimony.

ZINC POISONING.

White vitriol, white copperas, vitriol of zinc, flowers of zinc.

Symptoms.—The usual taste of metal in the mouth, with tightness about the throat; vomiting and purging, pains in stomach and belly, pale face and clammy skin, difficult breathing; seldom death.

Treatment.—Copious drinks of milk or warm milk and water; clysters, leeches, fomenting, etc.

SILVER AS A POISON.

Lunar caustic, fulminating silver.

For symptoms, see those of mercury, though the stomach-pain is generally more severe, and the breathing is very laboring and heavy.

Treatment.—Dissolve a table-spoonful of common salt in two pints of water, and give in glassfuls; or else give sea water. Then an emetic had better be given, and finally inflammation must be subdued, if it arise.

POISONING BY NITER.

Nitrate of potash, saltpeter, salprunella.

Saltpeter has been mistaken for Glauber's salts.

Symptoms.—Vomiting of bloody matter, sinking pulse, clammy sweats, pains of stomach, faintness, convulsions. Death sometimes in from three to sixty hours.

Treatment.—No antidote is known, so we must give an emetic, or use the stomach-pump, with copious draughts of warm water, to promote vomiting.

POISONING BY LIVER OF SULPHUR.

Hepar sulphuris, or sulphuret of potassium, is used in medicated baths, and they are sometimes dangerous; but poisoning mostly ensues from taking it as a draught. Three or four drachms caused death in fifteen minutes.

Symptoms.—Vomiting, faintness, pain, and sulphureted hydrogen fumes may be smelt.

Treatment.—Promote vomiting by a large tea-spoonful of mus-

tard, or two table-spoonfuls of salt; and give mucilaginous drinks, mixed with a weak solution of chloride (hypochlorite) of soda or lime, so long as the fumes of sulphureted hydrogen are smelt. After a time, clysters of the chlorides will be useful.

POISONING BY BARYTA.

Heavy spar, ponderous earth, muriate of barytes, cawk, or heavy stone.

Symptoms.—Vomiting, convulsions, palsy in the limbs, headache, deafness, pains in the belly, hiccup, colic. Death sometimes in eight or ten minutes, or within an hour.

Treatment.—Give freely of the sulphates of magnesia or soda in water, and as soon as possible, for, in a little time, all may be lost. When the cawk, or heavy stone, which is a carbonate of barytes, has been taken, a mixture of vinegar with one of the alkaline sulphates should be given. Sugared water, and mild soothing drink afterward.

PHOSPHORUS.

Symptoms.—From three-quarters of a grain to two grains, it has been stated, are sufficient to destroy life, and death may take place at various periods. The symptoms are those of inflammation of the stomach and bowels.

Treatment.—Give albuminous drinks, or some of the mucilages, having mixed magnesia with them; then emetics and purgatives. But when once the symptoms have manifested themselves, it is difficult to arrest their progress, for no antidote is known.

CANTHARIDES, OR SPANISH FLY, AS POISON.

Symptoms.—Vomiting or purging of bloody matter; great pain at pit of stomach, with violent colic; a quick pulse; difficulty and pain in making water, and sometimes blood is passed. To the foregoing symptoms succeed convulsions, alternating with fainting; delirium, and death.

Treatment.—Drink freely of milk, thick linseed tea, or mucilage of gum arabic. If there is no vomiting, give an emetic.

Clysters of gruel, fomentations, and the hip bath should be made use of.

SWALLOWING GLASS AND ENAMEL.

Make the person or child eat large quantities of beans, potatoes, cabbage, or bread, so as to fill the stomach and protect it from the edges or points of the glass.

LEAD POISON.

Sugar of lead, white lead, litharge, Goulard's extract, red lead.

Lead is often injurious to man, and is administered in various ways; when taken in small quantities at a time, the disease called painters' or lead colic is produced (which see), but when in largely poisonous doses, the symptoms are metallic taste in the mouth, tightness of throat, pains in the stomach, retching, often of blood.

Treatment.—Give freely of solutions of the sulphates of magnesia or of soda; also milk or albumen in large quantity. The stomach-pump may be of service, or an emetic of sulphate of zinc, if there is no vomiting present already.

POISONING BY ACRID PLANTS.

These are aconite or monk's-hood, anemone, Barbadoes nut, bryony, buttercup, celandine, crown imperial, daffodil, elder, hedge hyssop, hellebore, marsh marigold, mezereon, meadow saffron, palma christi, poison vine or oak, savine, spurge, squills, staves-acre, virgin's bower, and wall-pepper. Besides these there are certain vegetable productions, which are poisonous; these are aconitine, colchicine, colocynth, croton oil, delphinine, elaterium, euphorbium, jalap, gamboge, oil of savin, scammony, veratrine.

Symptoms.—Dryness and heat of the mouth, with a taste acrid or bitter; there is a sensation of strangling in the throat, difficulty of swallowing, vomiting, purging; pain, more or less, in the stomach and bowels. The nervous system then seems to suffer, and the person totters as if intoxicated; the breathing becomes oppressed; great weakness and sinking, convulsions, and death.

Treatment.—We must get rid of the poison, as soon as possible, by the stomach-pump; or else by an emetic of twenty to twenty-four grains of sulphate of zinc, or by a tea-spoonful of flour of mustard, or two or three table-spoonfuls of common salt in water; or else tickle the back of the throat with finger or feather then

encourage the vomiting by drinks of warm water, sugared water, barley-water, etc. Avoid giving vinegar or any acids.

When stupefaction comes on, coffee; cold dash of water repeatedly; walking about, if feasible.

STUPEFYING, OR NARCOTIC POISONS.

The poppy, bittersweet, yew leaves, cherry laurel, henbane, poison lettuce, prussic acid, opium, etc., come under this class.

The symptoms are sleepiness, then stupor, palsy, apoplexy, and death. The pupils of the eyes are generally contracted.

Treatment.—Here, again, we must get rid of the poison, by immediately introducing the stomach-pump, only using infusion of galls instead of water, if it can be quickly got; or we may give twenty-five to thirty grains of the sulphate of zinc in two table-spoonfuls of water, or by flour of mustard, or three table-spoonfuls of salt; encourage the vomiting by irritating the gullet or back of the mouth. It is, however, often very difficult to excite vomiting in these cases; then we should try this draught:

No. 239. Carbonate of ammonia.....	20 grs.
Powdered Ipecacuanha.....	30 grs.
Tincture of capsicum.....	2 tea-spoonfuls.
Water, or peppermint-water.....	3 ounces.

When the stomach has been emptied, we must give frequent draughts of vinegar and water, or of some acid and water; and brandy, coffee, with cordials, must all be given. Dashing of cold water over head and shoulders tends much to rouse; and the person must be made to walk about as much as possible, whether they will or not.

POISONING BY PRUSSIC ACID

is so rapid that little can be done to prevent death, which occurs very speedily. In one or two minutes the patient is usually quite insensible, the eyes fixed and glistening, the pupils dilated and unaffected by the light, the skin cold and clammy; the limbs lie as if they had no stiffness or vitality in them, and the breathing becomes slower and slower; the pulse can hardly be felt, and the stools and water, in some cases, pass away without any consciousness of the patient. Many have asserted that a shriek or scream is uttered as the last sound from the dying person; but no such

shriek or scream has been observed or heard in the human subject, though in some animals, as the cat, it is uttered.

The symptoms caused by prussic-acid and by opium differ in several respects. In prussic-acid cases, the coma (stupor) is almost instantaneous—in two minutes; in opium poisoning it is seldom seen for fifteen or twenty minutes. In this latter, the pupils are commonly contracted; in prussic acid poisoning they are dilated. Convulsions are more common in prussic acid poisoning; in this latter, death occurs generally in less than an hour; in that from opium, six to twelve hours is the average period of death.

Treatment.—Apply dilute ammonia, or smelling salts, to the nostrils; then give instantly some crystals of sulphate of iron, rubbed down in a mortar, with water; give directly afterward some liquor of potash, a tea-spoonful in some water. The jaws are, however, sometimes so firmly set that nothing can be got into the stomach, unless by a Newington's tube, or a gutta percha one, to go round and at back of the teeth; then we must dash buckets of cold water over the head and back repeatedly. Cold affusion, ammonia, brandy, and stimulants are what we must trust to.

There is but little time for any thing to be done.

POISONS, WHICH ARE BOTH ACRID AND STUPEFYING.

This class comprises the deadly nightshade, hemlock, tobacco, poisonous fungi or mushrooms, ergot or spurred rye, camphor, strychnine from nux vomica, ardent spirits.

POISONING BY MUSHROOMS.

There is so great a difficulty in distinguishing the wholesome mushroom from the poisonous that they had better not be eaten, unless grown for the purpose in mushroom beds. The eatable kinds are the field or cultivated mushroom, the common morel, and the common truffle. We may suspect fungi, which grows in moist, shady places; have many colors, or are gaudily colored; are dirty or bitten on the surface, and have soft stems. The Russians eat them freely, but they always salt, boil, and compress them, and thus the mushrooms, perhaps, are rendered harmless, just as the pickling and washing of the poisonous agaric of the olive render it eatable by the natives of the Cevennes. In the

north-east of Asia, the Bug-agaric is eaten by the Kamtschadales, as an intoxicating agent; and it causes the urine of those who have eaten it to possess an inebriating power, so that the urine is treasured up for that purpose.

Symptoms are sometimes those of a narcotic (stupefying) kind; at others, of an irritant nature, giddiness, dim sight, with illusions of sight. After the drowsiness passes off, nausea and vomiting succeed, though these states sometimes precede the stupor; then come on pains in the bowels, convulsions.

Treatment.—Use the stomach-pump; and clear the stomach by emetics, by a tea-spoonful of flour of mustard, or three table-spoonfuls of common salt in half a pint of water. If inflammation in stomach or bowels arise, leech; and give purgatives, and treat as for inflammation.

NUX VOMICA, ETC., AS A POISON.

Under this head come nux vomica, St. Ignatius's bean, false angustura, Indian nut or cocculus indicus, woorara or Indian arrow poison, camphire, strychnine, brucine.

Symptoms.—Stiffness of back, head drawn back, irregular breathing, convulsions; the breathing is by spasms or fits, until death ensues in one of them. The sixth of a grain of strychnine killed a dog in two minutes, and the third of a grain destroyed a wild boar in ten minutes. Brucine is twenty-four times less powerful.

Treatment.—Empty the stomach by the stomach-pump, or by an emetic of twenty-six grains of sulphate of zinc, or mustard or common salt, as above; then dilute freely with vinegar and water. If the breathing stops, try artificial respiration, as in cases of drowning. A spoonful of this mixture should be given every ten minutes:

No. 240. Sulphuric ether.....	60 drops.
Spirits of turpentine	2 drachms.
Sugar.....	$\frac{1}{2}$ oz.
Water.....	2 oz.
Mix.	

POISONING BY HEMLOCK, NIGHTSHADE, ETC.

Deadly nightshade, water hemlock, fool's parsley, hemlock, hemlock dropwort, tobacco, laurel rose, thorn-apple, rue, foxglove,

manchineel, darnel or rye-grass, ergot of rye, atropine, nicotine, digitaline.

Symptoms.—Agitation of a nervous kind; pain; convulsive movements of various parts; sometimes locked jaw; delirium, often of a very merry, laughing character; retching, vomiting, and purging, with pains in the belly; intoxication, with depression and trembling; a sinking pulse, clammy sweats, and death. The fool's parsley (*œthusa cynapium*) is common in gardens and hedge-rows, and it so much resembles the edible, innocent parsley, that mistakes are frequently occurring; but it may be known from the garden parsley by the smell of its leaves when rubbed, which is peculiar, disagreeable, and very different from that possessed by the leaves of parsley. The flowers are white; those of the garden parsley are of a pale-yellow color.

The water parsnep or hemlock water-drop wort, is a very virulent poison; it grows abundantly in the south of Ireland. The only way to distinguish it is, by the botanical characters.

The true hemlock is the only plant of the kind with a smooth, spotted stem. The bruised leaves emit an odor like that of mice.

Treatment.—An emetic of ipecacuanha and sulphate of zinc—twenty grains of ipecacuanha, with ten grains of the zinc or mustard flour, or common salt. The stomach-pump should be used, if at hand; then give a purgative, Epsom salts or Glauber's salts. For the stupor, etc., do as is recommended for opium; a little blood taken from the arm will relieve probably. If inflammation ensue, act accordingly.

POISONING BY ALCOHOL—ARDENT SPIRITS.

Rum and brandy contain about fifty-three per cent. of alcohol by measure; gin and whisky, about fifty-seven per cent.

Symptoms.—Violent excitement, flushing of face, contracted pupils of the eyes, giddiness, and delirium, followed by dozing and dangerous sleep, and from this the patient may awaken only to die. The lividly-pale face, the deep snoring breathing, and a dilated, motionless pupil of the eye proclaim that death is not far off, or that recovery is beyond all hope. The breath issues from the mouth, charged with the alcoholic vapor, by the smell of which cases of dangerous drunkenness may be discriminated from those of apoplexy; the contracted pupil also distinguishes drunkenness

from apoplexy; the pupils of the eyes are contracted in natural sleep, in poisoning from opium and alcohol; it is dilated in compression of the brain. In Germany, Liebig tells us, a poisonous wine is drank; that is to say, it is poisonous because fermentation is still going on; the heat of the stomach increases the effect of the carbonic acid gas which is given off from the fermenting wine, and this gas penetrates through the coats of the stomach, and rises through all the intervening textures, until it arrives at and fills the air-cells of the lungs, of course displacing the atmospheric air. The symptoms of suffocation from an irrespirable gas ensue. Here the best remedy is, to make the patient inhale the fumes of ammonia. This wine is called the feather-white wine.

Besides this acute poisoning by alcohol, there are also cases of chronic or slow poisoning, infinitely more numerous, and quite as deadly in the long run, as those of acute poisoning.

These chronic results of excessive drinking are called delirium tremens. Irritative indigestion, fullness of the head, looseness of the bowels, vomiting, sometime jaundice, the nutmeg liver, dropsy, diabetes, palsy, insanity, are the symptoms and results.

Treatment.—In all acute cases, empty the stomach by means of the stomach-pump, or by mustard, flour, or salt. Dash buckets of cold water over the drunken person, provided his skin is warm and not cold. Cold water into the ears has roused a little sometimes.

The carbonate and acetate of ammonia are the medicines to be given—three to five grains of the former in water; heat to the pit of the stomach, loosening all tight cravats or ligatures about the neck, laying the head rather high; cloths dipped in warm vinegar, to rub the body with. The dangerous signs are a failing pulse, body getting colder, eyes insensible to light, labored breathing.

Many are saved by the early occurrence of vomiting.

With respect to delirium tremens, liver diseases, stomach and bowel ailments, jaundice, etc., see the respective articles for the proper treatment.

PUTREFYING OR SEPTIC POISONS.

Poisonous serpents and insects, mad dogs, diseased fish, sausages, saveloys, etc., kept too long, rancid bacon, flesh of animals under certain circumstances. In 1842, some people in Toulouse

were poisoned by eating snails which had been feeding on the *coriaria myrtifolia*. The mussel, oyster, crab, herring, trout, sprat, mackerel, salmon, and the eel come under this denomination.

Symptoms.—Chills, pains in stomach and head, restlessness, thirst, redness and swelling of face and eyelids, itching of skin, red, puffy blotches over the body, like violent nettlerash, convulsions, and sometimes death in from three hours to as many days.

Treatment.—This depends on the time which has elapsed since the poison has been eaten; if within an hour, give an emetic—the mustard, common salt, or sulphate of zinc; if a longer time have elapsed, give a strong purgative, to carry the poisonous materials quickly through the bowels. Give strong lemonade as a drink.

Where a person has been bitten by any venomous snake, a sharp burning pain is felt where the two small wounds are visible; swelling succeeds, to a great extent and degree; red inflamed lines run up the limb, and knots of inflamed glands are visible in their course. Fever, with delirium, comes on; anxiety and great depression, with weakness; the breathing is labored, the pulse small; pain at the chest-bone, fainting, thirst, a feeling of sickness, and vomiting. The wounded part becomes gangrenous, green-colored, and the part dies, and may be thrown off in time, with an offensive smell.

Death from a viper's bite occurs in 30 or 40 hours usually; but in the bites of the rattlesnake, the cobra di capello, etc., death occurs speedily; unless the person survive the first deadly effect, then he is cut off by irritative fever, inflammation, and the gangrene.

Treatment.—Apply a cupping-glass to the wounds; then cut the skin with lancet or penknife, and apply the cupping-glass; or suck with the mouth, which may be done with impunity, if the mouth and gums are every-where sound, and if the poison is spit out again directly. We should bind a ligature tightly around the limb, between the bite and the heart. If the limb is swollen, the skin should be smeared with oil; and if we see the wound shortly after it has been inflicted, a strong ascetic acid should be applied to the wound, for this acid coagulates the poison. For the constitutional treatment, strong stimulants. Brandy and ammonia, and brandy has been given in very large quantities, without causing the slightest intoxication; it must be given in wine-glassfuls, very rapidly, and it will only just support the nervous system under the severe sinking produced by the deadly poison; besides, give 30 drops of

the compound tincture of ammonia, in water, every half hour. In the island of St. Lucia, where bites from the deadly coluber carinatus are frequent, Dr. Ireland cured all his cases of bites from this snake by giving arsenic—two drachms of Fowler's solution of arsenic, ten drops of laudanum, and half an ounce of lime-juice every half hour; six to eight doses sufficed usually. If this solution is not at hand, half a grain of arsenic may be given every half hour. The success of the Tanjore pill suggested the use of arsenic.

There is strong evidence as to the good effects of poultices of ipecacuanha in the bites of venomous snakes. We read of the guaco, the ophyoxyllon, and of other plants being successful remedies, both as preventives of danger and as curatives; but the best plan to be adopted is the one detailed above.

The fever and local inflammation, with its gangrene, must be treated on general principles. (See INFLAMMATION.) Painting the swollen, inflamed part with tincture of iodine—thirty-four grains of iodine to each ounce of spirits of wine—will do the most good in the early stage. It should be applied by a brush every day, and the swelling and inflammation sometimes are speedily reduced.

When gangrene has set in, and the parts are separating, with a bad smell, the charcoal poultice, often renewed; put cloths, wetted with solutions of chloride of soda or lime, over the parts.

A great deal of bile is formed in snake-bites; so, where the sinking and exhaustion are gone by, an emetic would be advisable, if there had been no vomiting previously. For much pain, give opium, thirty drops or more of tincture of opium, at night, or oftener, in some water.

In the Indies, in Africa, and South America, much irritation and suffering take place from the stings of insects. The scorpion's bite produces a sharp pain, local inflammation, with depression and some constitutional suffering, which, in one case, lasted thirty-six hours; but Kirby and Spence tell us that the black scorpion of Ceylon frequently inflicts a mortal wound.

The scolopendra is sometimes a foot long in Jamaica and elsewhere; and some spiders in hot climates can inflict tolerably severe wounds. The tarantula of southern Italy has been the subject of many fabulous accounts; its bite produces no injurious effects on the human subject. But a spider is found in the East (the argas persicus, the punaise venimeuse de miana of travelers) whose bite is poisonous, causing low fever; but this account has been denied

by several travelers, as well as affirmed; it is not likely that so small an insect should produce such alarming effects in a human body by a single bite.

The bee, the wasp, the hornet, musquito, and the harvest-bug often cause great irritation, in proportion to the number of stings. The most fatal cases, and the only fatal cases from a single sting, is where a wasp or bee has been swallowed in some fruit, and then stung the back part of the throat, or near the windpipe.

Treatment.—In the case of a sting in the throat, apply leeches externally, and use gargles of hot salt and water, to cause a flow of saliva and mucus, and so lessen the swelling; but if suffocation be threatened, open the windpipe. This can be done with a common penknife, or very sharp knife, if a person will but insert the point and shoulder of the knife in the *exact* central line of the fore-part of the throat, about seven-eighths of an inch to one inch below the projection called Adam's-apple. Of course, if a medical man can be obtained, he should be waited for; but if there is no one, and suffocation threatens life, it is better for a non-professional person to do it, if he possess coolness and courage.

The central line is the spot, and the instant the air-pipe is opened, the operator will be made aware of it, by a rush of air, and by all resistance to the knife's point ceasing.

In stings from bees, wasps, etc., examine the part with a lens, and extract the stings, which are often left in the wounds, with a pair of forceps or small pliers. Apply cold water. Some recommend scraped flour, chalk, or starch; some apply oil.

The author paints with tincture of iodine, once every day or every other day; but Goulard water is very useful, keeping the part always wet with renewed wet linen.

HYDROPHOBIA. (See Chapter IV and Index.)

ACCIDENTS.

Suspended animation, or asphyxia, is of frequent occurrence.

The atmosphere is continually receiving quantities of freshly evolved gases, from various sources, but Nature has set up various modes of keeping the air pure.

From a curious statistical digest, not long ago published, it appears that the human family numbers 700,000,000, and its annual loss is 18,000,000, which produces 624,400 tons of animal matter, which, in turn, generate, by decomposition, 9,000,000,000 cubic feet of gases, which are cleared away from the atmosphere by vegetable matter decomposing and assimilating them for their own uses. But let these gases be evolved into, and retained within, confined or narrow bounds, they will render that place very dangerous for human beings to live in, particularly to sleep in.

APPARENT DEATH FROM CHARCOAL VAPOR AND CARBONIC ACID GAS.

We hear of deaths from persons sleeping near lime-kilns, or in close rooms, where charcoal or coke has been burning. In pits, wells, and in breweries, where fermentation is going on, there is danger from this gas; also, in very crowded rooms, where many candles or lamps have been burning, and many grown-up persons vitiating the air.

One per cent. of carbonic acid gas in a room will cause uneasiness, and ten per cent. is probably the limit where immediate danger to life is threatened; and every grown-up person vitiates 216 cubic feet per hour of the atmospheric air. And, thus, if too many persons sleep in a room, or pass several hours crowded together in rooms which are not properly ventilated, the atmosphere becomes dangerously deteriorated, and many are carried out half fainting, or headache comes on, etc.

Cool air, admitted into a crowded apartment from the floor, has its temperature raised from ten to twenty degrees by the time it rises to the height of the heads of the people in the room. At this altitude it receives the admixture of carbonic acid gas from the mouths and nostrils of those who are in the room; and the air is further vitiated by the burning of candles, and the exhalations from the skins of so many people.

The air ascends and accumulates above, but it is displaced by successive portions of heated air, cools, and redescends below the faces of the persons, to be again breathed, until it can be breathed no longer, from its increasing impurity. If the room is well ventilated, and the vitiated, heated air is carried off as fast as it is formed, no mischief of this kind can ensue.

Animation is sometimes suspended, by people, on going to sleep, leaving a fire burning in the sleeping-room, which fire is useful so long as it burns; but when, toward morning, it goes out, the cold air descends the chimney, and drives fumes of carbonic acid gas, sulphur, etc., into the bed-room. In the holds of ships there is often an accumulation of this gas.

Whenever this is feared, we should try the purity of the air by letting down a lighted candle, which burns with an elongated flame, if the air is a little vitiated, but goes out at once if there is much of this gas; but there still may be danger, even although the candle continues to burn, so we must not depend on that alone.

If any one falls into this gas in wells, or ships' holds, or elsewhere, let no one try to extricate him rashly; he should wear over the mouth and nostrils a cloth soaked in lime-water, or in a weak solution of caustic potash, or even in plain water. Water should be dashed over the person and place, or the gas let out (if in a large beer-barrel), by making a hole instantly with an axe, at its bottom, when the gas will pour out like water; being much heavier than the atmospheric air.

In all rooms where this gas may be expected to accumulate, one mode of ventilation may be derived from the chemical action of lime, and we should spread a quantity of newly-slaked lime on a board; the lime, by its affinity for it, will absorb the carbonic acid gas from the atmosphere of the room, and thus purify it, giving admission to fresh, pure air.

To show the baneful effects of this gas upon the health of people, Dr. Chadwick relates that typhus fever occurred frequently, and fifty-seven cases of it in two months, in a large tenement house, wherein numbers of poor people lived crowded together. At length, the doctor induced some one to fix into the ceiling of each room a tube, which communicated with the chimney of a neighboring factory. From that time fever was well-nigh expelled from the place, since ventilation had been effected.

Symptoms.—Death from drowning, or strangulation, arises from a negation of air, but from carbonic acid gas there is a poisonous, narcotic (stupefying) action also; the symptoms vary with the proportion of the gas inspired.

In fatal cases, the person is rendered instantly insensible, and he falls to the ground, or lowest point; the breathing is at first difficult and snoring, but it soon ceases altogether; the body con-

tinues warm, and the limbs are flexible, though sometimes stiff or convulsed; the face is of a leaden color, or very pale, particularly the lips and eyelids. Vomiting occurs in some.

On recovery, headache, pain or soreness in the body, and sometimes palsy of the muscles of the face occurs.

Treatment.—Pouring cold water over the body should be practiced, and the chest and extremities and soles of feet rubbed with stimulating liquids and a brush; if the body is cold, a warm bath. When signs of recovery are apparent, blood should be taken from the arm, if feasible. Blowing into the air-pipes, not too strongly, with a pair of bellows, may be useful. Smelling salts to the nostrils. When roused, give some brandy; rub the body dry, and put him into a warm bed.

In suspended animation from charcoal vapor, from coal vapor or sulphurous acid, the vapor of lime-kilns, or from confined air, the treatment is similar.

COAL GAS.—CARBURETED HYDROGEN.—CARBONIC OXIDE.

The odor of this gas is well known, which is owing to the vapor of naphtha; and we must be cautious wherever it is to be smelt, for it may do much mischief, although considerably diluted. This odor is sensible when the gas forms only a thousandth part; it is more so when forming a seven hundredth, and it is well marked when forming an hundredth and fiftieth part. When air contains nine per cent. of it, it may destroy life, if long respired. Beware of taking a lighted candle into any place where this gas is suspected to be. It is a very penetrating gas, passing through floors, bricks, etc.

Symptoms.—Nausea, headache, vomiting, weakness; mind is confused; some paralytic symptoms may exist; pale face, impeded breathing, and other signs, such as are before described, or convulsions.

Above nine per cent. of this gas forms an explosive mixture with air.

GAS FROM DRAINS AND SEWERS.—SULPHURETED HYDROGEN.

From six to eight per cent. of this gas might kill.

Symptoms.—Giddiness, sickness, debility; face pale, lips of violet hue, and the person falls inanimate. If the gas is less con-

centrated, the symptoms vary, acting like a narcotic irritant, whereas it is a narcotic when concentrated.

Treatment.—Removal into pure air, pouring of cold water over the body, bleeding, stimulants. This gas will destroy life by its action on the skin; for a rabbit, which was inclosed in a bladder of sulphureted hydrogen gas, but which was allowed to breathe freely in the atmosphere, died in ten minutes.

APPARENT DEATH FROM DROWNING.

A person can not remain beneath the surface of the water longer than two minutes without a suspension of animation taking place. Among the Navarino sponge-divers, not one of them could sustain the entire submersion of the body for two consecutive minutes; and the average period was seventy-six seconds; and the best pearl divers of Ceylon could rarely sustain immersion longer than fifty seconds.

How long the period of entire submersion is required to be for death to take place, when there is no longer a hope of resuscitation, is not settled; for while some, who had not been entirely submerged for longer than a minute, and whose bodies were still warm and pliant, could not be resuscitated, others have been recovered who had been submerged several minutes; yet equally judicious treatment may have been adopted in both cases.

The probable reason is to be found in the fact that the susceptibility to the restoration of life may be different in different individuals; and while some are more tenacious of life than others, and more easily acted upon by stimuli, the circumstances preceding or attending the submersion may also differ.

Resuscitation has been effected after an entire submersion of five consecutive minutes, and, perhaps, this might be taken as a maximum; still, many instances are on record of recovery after a submersion for a much longer time. Some of these narratives are entitled to credit, though others are altogether to be discredited. Our duty is plain enough, and that is, to persevere in our efforts to restore animation for longer than the above statements would encourage us to do. In one case, an hour and a half elapsed before there were any signs of returning animation; and in Dr. Douglas's case, resuscitation began to be established, though feebly, even then, after eight hours and a half spent in treatment.

Treatment.—Immediate treatment is of the utmost consequence; a delay of ten or more minutes, or less, may be fatal; and it is more important to look to this than to the mere period of submersion. Wipe the body dry; raise the head and shoulders; restore the warmth of the body by warm blankets, bottles of hot water, bags of hot sand, applied especially to the pit of the stomach and to the feet; the warm water bath or warm air bath. The hot air bath is preferable to the water bath, because the skin then acts as a respiratory organ; the heat of the bath should be 98° or 100° , supposing the submersed person to have been taken out of water of from 50° to 60° of temperature; or the bath may be as hot as the hand can bear; but if submersed in water but little above 32° , the heat of the bath should not exceed 85° or 90° ; for the temperature of an animal is in proportion to the quantity of air it consumes, and a sudden rise of temperature, demanding a consumption of more oxygen, might be fatal instead of useful.

We should apply stimulants (ammonia) to the nostrils. We should clear the mouth and nostrils of mucus, and try to move the chest mechanically, by pressing on the chest-bone or ribs, and allowing them to rise again; and, above all, we must diligently rub all parts with stimulating applications, the compound camphor liniment, or tincture of cantharides and oil, etc.

Some try artificial inflation of the lungs by the bellows; but Mr. Woolley, of the Humane Society, denies its efficacy, while it interferes with our keeping up energetic friction. More good might ensue from getting air out of the lungs than by forcing any in, because the mechanical movement of the chest in respiration might follow. If the bellows inflation is tried, our efforts should be gentle, or the air-cells may be ruptured.

Electricity or galvanism has been recommended; and though no time should be lost in waiting for either, yet, when ready, either should be tried. Galvanism might be of service, one disk being placed at the back of the neck, the other at the pit of the stomach in front, and the galvanic influence so passed.

As soon as signs of recovery appear, and a power of swallowing has returned, we may administer stimulants—brandy and water, wine, etc. Some throw into the stomach a little of one of these stimulants, by means of a stomach-pump.

SUSPENDED ANIMATION FROM STRANGLING OR HANGING.

Symptoms.—The venous blood is prevented returning from the head by the rope round the neck ; thus the face becomes nearly of a black color, the eye-balls stand out from their sockets, and the nostrils are unnaturally widely distended.

Treatment.—Bleed from the jugular vein or arm directly, use the bellows to inflate the lungs, and treat as for drowning, with the exception of restoring warmth to the body by artificial warmth.

SUBSTANCES FALLING INTO THE AIR-PIPE.

When this is the case, if the body is not readily dislodged, and distress increases, cut into the air-pipe, in the central line, an inch, or a little less, below the projection in the neck, called Adam's-apple, with a good penknife. This may be done without danger.

Substances in the gullet may often be shot out by an effort at vomiting, or dislodged by some one putting his forefinger down as low as he can, or by a pair of small pliers.

LIGHTNING STROKE.

Little is to be done ; galvanism might be tried, and the bellows, to inflate the lungs. A fever often follows recovery from this accident.

INTENSE COLD

Symptoms.—General numbness ; a sort of intoxication ; inclination, almost irresistible, to sleep ; loss of consciousness, of sensibility, and of life.

Treatment.—Wrap the body in a blanket ; rub the naked body with snow, pounded ice, or cold water, rubbing from the body toward the legs ; then, after some time, rub with cloths dipped in milk-warm water, so as to restore warmth gradually. If no snow or ice be at hand, cold-water bath, and rubbing while in the bath. When the skin begins to feel warm, put into bed, and treat as for drowning.

Frost-bitten parts must be treated on similar principles, by rubbing them with snow, pounded ice, or cold water ; and we must be very cautious in giving stimulants, or applying external heat, in however slight a degree.

APPARENT DEATH IN NEW-BORN INFANTS.

This occurs with two sets of symptoms—one where the skin is pale and bloodless. Here the navel-string must not be cut, twisted, nor dragged ; but we should raise the infant's head, wrap the body in flannel, use hand-friction to the back-bone and the soles of the feet, while the head and face should be exposed to the air ; and we must try artificial breathing through any small tube or pipe.

If the skin be dark and discolored, and the face swollen and livid, or dark-colored, the navel-string must be cut and allowed to bleed ; while the head is to be held up, and the chest and belly are rubbed with warm flannels. If no blood will flow, we must apply one or two leeches behind the ears, and put the infant into a warm bath. Artificial breathing should also be tried.

SUBSTANCES IN THE EYES.

If sand, or any small substance, or an insect, etc., get into the eye, it may best be removed by means of a camel-hair pencil dipped in oil, or by a bit of paper rolled up into the form of and size of a quill, and softened in the mouth. When the substance gets fixed in the coats of the eye, it may be removed by the thumb-nail, or by a blunt-pointed piece of wood.

INSECTS AND SUBSTANCES IN THE EARS.

Insects may be killed by dropping in any sort of oil, as the oil of almonds, or olive oil. Small substances may be extracted with small forceps, pliers, or tweezers ; and they should be extracted as soon as possible ; for, if inflammation were set up, it might, in some constitutions, cause danger, by extending to the brain.

Leeches may be expelled from any place by a strong solution of common salt.

BURNS AND SCALDS

have been treated of in the fourth chapter (see INDEX) ; but here we may say, that for trifling and non-extensive burns and scalds, cold water or Goulard water may be applied, and renewed as soon as they become warm. The blisters are not to be opened for two

or three days; then with a needle. Cerate or carron oil may be applied; an aperient, and poultices afterward.

In children and infants, even slight burns are dangerous. For severe burns or scalds, or where they are extensive, no cold applications, but bathe the parts with linen dipped in warm spirit of turpentine, or spirits of wine; then a cerate of one part of oil of turpentine and two parts of Basilica ointment, or of common lard, if no other cerate be at hand. Open all blisters with a needle; if there is much discharge, sprinkle finely-powdered chalk, and apply a linseed poultice over the parts.

A low fever often follows. Do not lower by bleeding or by strong purgatives, but support the strength, not by stimulants, but by rice-milk, chicken broth, and such like.

When matter (discharge) begins to form, dress with creosote ointment—thirty drops of creosote to one ounce of lard; rub them well together. This may prevent scars from being so deep as they otherwise might be.

SPRAINS

are sometimes very severe accidents, producing great pain and swelling, followed by inflammation; and where a large joint, such as the knee, or even the ankle, is affected, there may be fever also.

Treatment.—Rest in the position the most easy for the part is essential; neither should the sprained part hang down; fomentations of hot water, or cold water, if the sufferer find more ease from it than from hot. The inflammation must be first completely subdued; and if it linger about, two or three blisters, to remove it. Then rub the part, two or three times a day, with the hand, or with opodeldoc; after some time, moderate exercise, and a flannel bandage, evenly applied. Sprains often leave a weakness of the part behind, if they are not properly treated at first.

BRUISES, OR CONTUSIONS,

may be of all degrees of severity, the pain and swelling corresponding. Sometimes the swelling is so great that the skin threatens to burst; then a small opening should be made. The skin is discolored, turning from a reddish hue to a black, and in no long time. In about three or four days the color is violet, and the edges fade away into the surrounding skin; the color becomes, in

a few more days, green and then yellow, when the discoloration soon after disappears.

Treatment.—In slight cases, we must bathe the part with vinegar and water, or spirits and water, or paint them with iodine tincture, twenty grains to the ounce of spirits of wine, if any iodine be at hand. The bruised part should, like the sprained, be kept at rest, and in a raised position. Cold or iced water is a good application; but in the severer cases, inflammation must be guarded against by leeches near to the part, not on it; by purgatives, low diet, and rest.

CUTS AND WOUNDS.

A simple cut, of no great depth nor extent, merely requires to have its edges brought together by sticking plaster, after the part has been thoroughly cleaned from dirt, etc.; but sometimes an artery is wounded, and the case becomes serious. When cuts bleed much, we shall know when an artery is wounded, by the blood issuing forth in jets or jumps; if it flows evenly out, and is not of a bright red color, the blood comes from a vein. In all cases, pressure is necessary; and when an artery is wounded, put your finger at once and boldly into the wound, down to the bleeding point or spot, which spot is ascertained by the warm, gushing blood. Keep your finger there, until other arrangements can be made. Apply a tourniquet on the limb, above the wound, or a silk handkerchief twisted tight by a piece of wood. The pressure, to be effectual, must be nicely applied; and the first application should be of lint or linen, formed into a fine point, which should fit accurately the bleeding point; upon this lay another piece of folded linen, a little larger; over that another, until there are several, and all must be kept tightly pressing on the point by a bandage, to keep all in their places. Rest, of course, is essential. But if a large artery be wounded, a surgeon becomes necessary, to stop the bleeding, by putting some silk thread round the vessel higher up on the limb.

FRACTURES, OR BROKEN BONES.

These should be put under a surgeon's care as soon as possible; but if no one is at hand, an attempt must be made to do what is necessary. The symptoms of fracture are evident—loss of mo-

tion, with distortion or deformity of the limb, which may be bent, shortened, or twisted; the ends of the fractured bone grate on each other on moving them, and there will be pain on motion, and spasms or startings of the muscles.

Treatment.—Remove the person in the gentlest manner possible; and then the ends of the broken bone are to be placed in their natural position, so maintained, and perfect rest must be afterward enforced.

To effect the first purpose, the broken ends often ride over each other; then the limb requires to be extended, that is, pulled gently and firmly in the proper direction, and so fixed that the muscles may not again displace the broken ends. Before doing this, we must relax all the muscles which oppose our efforts, as far as we can, and keep the limb in as easy a position as possible. This is called setting or reducing the fracture, and requires two persons, one to hold firm one part of the limb, the other to extend or pull it downward, or in the right direction.

The limb must next be maintained in this position by some mechanical contrivance. For this purpose splints are used; they are made of thin plates of wood. A measure should be taken of the sound limb, and the splints should be made long enough to rest against the firm, projecting bony points of the limb. The splints should be scored in their length, so as to allow of their readily adapting themselves to the part; and wherever they rest upon or touch projecting points, a padding of loose tow, or thick blanket, must be inserted. These splints are kept in their places by bandages; but if there is much swelling, the splints and bandages must not be applied till it is gone down; and if swelling come on after their application, they must be taken off, or inflammation and gangrene may ensue. Wherefore, every one should examine daily the state of the limb, after the bandages have been applied, to detect the first and earliest appearance of swelling.

Other splints have been tried—pasteboard softened in boiling water, so fitted to the part, and allowed to dry and stiffen; or layers of lint and bandage, or old linen, soaked in starch mucilage, forms a dry, light, yet unyielding support. Straw splints may be used, made by filling a linen bag of the size required with unbroken wheat straw, such as is used in thatching, the straw being cut to the length of the limb, and the open end of the bag then sewed up.

If muscular twitches of the limb are troublesome, some tincture of opium must be given, twenty-five or thirty drops at night, in water. Inflammation must be subdued by cold lotions, aperients, leeches, etc.; and if debility come on, the strength must be supported, without stimulating.

Broken bones become consolidated in young persons from the twenty-eighth to the thirtieth day after the accident; in grown-up people from the thirtieth to the thirty-fifth day; and in the aged, from the thirty-fifth to the fortieth day.

If a fracture has united crookedly, an attempt must be made to set it right, by bending the part; and this can be usually done with success before the fourth week has elapsed, and even later.

DISLOCATIONS

may happen at any time, and should be reduced immediately, before the person has recovered from the shock, and before the muscles have had sufficient time to contract and fix the bone in its new position.

Dislocations are distinguished from fractures without difficulty; there is none of the grating noise usual in fractures; the fractured bone, when set right, becomes distorted again directly, not so the dislocated bone. The fractured bone is more readily moved than even the sound bone, not so the dislocated bone; the form of the joint is changed in this latter.

Treatment.—A towel, applied so as not to injure the skin, is to be fixed round the dislocated bone, while another is to be wrapped round the body, or applied to the upper limb, so as to afford a fixed and unyielding point of resistance. Then the dislocated bone must be gradually extended (pulled upon), until the head of the dislocated bone is on a level with the joint, when the muscles of the part, aided by a little guiding of the operator's hand, will cause the bone to occupy its natural situation.

Bandage the limb, so as to prevent its free use for a few days; and pumping cold water may tend to strengthen the joint.

All this should be done at once, and can be, by any cool, courageous person; for, if much time go by, and the dislocation remain, pulleys are often required to effect the reduction, and tartar emetic to lower the power of the resisting muscles, in which case a surgeon's help is indispensable.

RUPTURES

are soft swellings which appear in the groins, generally very suddenly, and after straining, or some violent muscular effort.

If the fingers be placed on the swelling, an impulse may be felt by them, on the person coughing. Now, the danger from this swelling is, that from costiveness, or other causes, it may enlarge, become hard, suffer pressure at its narrowest part, inflame, and put life in immediate danger, and require nothing less than a surgical operation.

When any one is thus afflicted, let him or her lie down, and, after a time, the swelling will probably reënter the abdomen or belly, whence its contents were propelled. If not, after a few hours' rest in the horizontal position, the swelling may be pushed up into the abdomen by the fingers of the patient.

The next point is to keep the said contents in their proper place, and this can only be done by stopping the hole of exit with a truss; and a truss, single or double, as the case may require, should be applied over the part where the swelling commenced, and worn constantly, while at work or in the erect position. Every one neglecting this precaution is always in danger.

Trusses should fit so well as to give no pain by their pressure anywhere.

The only other necessary precautions are to keep the bowels always gently open, so that a hard, straining motion is never necessary. For this purpose, the powder for piles, of sulphur and jalap, is useful (see PILES), or two or three tea-spoonfuls of Epsom salts, with ten grains of powdered jalap, and as much of powdered ginger, when necessary, never allowing the stool to become hard.

Avoid riding on horseback as much as possible, and all great or sudden muscular efforts.

FAINTING FITS.

Keep the head low, give cold water, and sprinkle a few drops over the face. Some wine or brandy, or sal volatile, thirty drops in a wine-glassful of water.

CONVULSIVE FITS. (See CONVULSIONS; also EPILEPSY and APOPLEXY, and HYSTERIA, or HYSTERICAL FITS.)

FORMS OF MEDICINES

LOTIONS

are applied to cool the affected parts; then they should be renewed as soon as they become warm. If they are meant to soothe or act like a fomentation, then put a piece of oiled silk over the linen, wetted with the lotion.

Iced water is a good lotion to inflamed parts, and when the head is hot; also in delirium, etc. A cap of ice, or ice in water, in a bladder, or in a Mackintosh cushion, are all of use.

In summer, water may be cooled down to the freezing point by either of the following mixtures:

Sal ammoniac, 5 parts; niter, 5 parts; water, 16 parts. Or, nitrate of ammonia, 1 part; carbonate of soda, 1 part; water, 1 part. Put the water into a vessel, and the vessel into the freezing mixture, and put flannel around the vessel which contains the freezing mixture.

Nitro-Muriatic Acid Lotion.—Of nitric acid, $\frac{1}{2}$ oz.; muriatic acid, 1 oz. Mix. Half an ounce to a quart of water, for a lotion to the right side, when there is deficient action of the liver; to be applied by linen laid on. Two ounces of this acid to a gallon of water for a foot bath in similar cases, and in costiveness.

Spirit Lotion.—Of spirits of wine, 1 oz.; of water, 15 oz. Mix. Apply by means of a piece of thin muslin, to allow of rapid evaporation.

Goulard Water.—Of sugar of lead, 14 grains; of vinegar, 1 or 2 tea-spoonfuls; of spirits of wine, 1 tea-spoonful, and of soft water, 8 oz.

The spirits of wine may be omitted. This lotion should not be applied over open skin—over open ulcers, etc.

Zinc Lotion.—Of sulphate of zinc, 60 grains; of soft water, a pint, for bruises, and as an injection against the whites.

Alum Lotion—is made in a similar way, and used in similar cases—in sore mouth and gums, and against the whites.

Drops or Lotion for the Eye.—To 1 oz. of soft water add from 2 to 4 grains of sulphate of zinc, or 1 grain of sulphate of copper, or 1 grain of nitrate of silver. Either of these is useful in inflamed eyes. Drop one or two drops night and morning; but

leeches to temples should precede, unless the inflammation is scrofulous. (See OPTHALMIA.)

LINIMENTS

are to redden the skin, and should be rubbed in; they tend to remove swellings which are connected with local debility. Dip a rag in ether, or camphorated spirit, and lay it upon the skin, cover over with oiled silk—in colds, sore throats, etc.; or do so with

Liniment of Ammonia, or Oil of Hartshorn.—Of liquor of ammonia, 1 oz.; olive oil, 2 oz. Mix. Or, of carbonate of ammonia, $\frac{1}{2}$ oz. to 1 oz. of water; then add the oil.

Opodeldoc—Soap Liniment.—Of hard soap, 1 oz.; of camphor, 120 grains; spirits of wine or of rosemary, 5 oz. Mix. To this 1 oz. of tincture of opium may be added when the object is to allay local pain; rub it only on sound skin.

Turpentine Liniment.—Of soap, $1\frac{1}{2}$ oz.; camphor, $\frac{1}{2}$ oz.; spirits of turpentine, 8 oz. Mix. This is for severe burns.

Liniment of Lime Water.—Of linseed oil and of lime water, equal parts. Mix. For burns.

Liniment to bring out Yellow-headed Pimples.—Of olive oil, $1\frac{1}{2}$ oz.; of tartar emetic, 2 drachms. Rub two tea-spoonfuls into the part, night and morning, until pimples begin to appear. These pimples leave no scars behind them; those produced by tartar emetic ointment often do.

OINTMENTS.

Tartar Emetic Ointment.—Of tartar emetic, 60 grains; lard, 1 oz. Mix. This is used like the preceding—to relieve pain, internal chronic inflammation, etc.

Ointment for Piles.—Of powdered galls, 60 grains; lard, 1 oz.; of strong solution of subacetate of lead, 15 drops. Mix.

Ointment for the Eyelids.—Of citrine ointment, 30 grains; lard, $\frac{1}{2}$ oz. Dissolve with gentle heat.

Sulphur, or Itch Ointment.—Of sublimed sulphur, $1\frac{1}{2}$ oz.; lard, 4 oz.; rub well together. If we add 1 oz. of subcarbonate of potash, it will be more efficacious; or $\frac{1}{4}$ of an ounce of sal ammoniac will answer equally well.

Spermaceti Ointment.—Of spermaceti, $\frac{3}{4}$ of an oz., or 6 drachms; white wax, 2 drachms; olive oil, 3 oz. Mix with gentle heat.

SINAPISM, OR MUSTARD POULTICE.

These redden the skin. Mix equal parts of flour of mustard and of linseed meal. If the flour of mustard be made of the yellow mustard, mix the two together by means of hot vinegar; if it be made of the brown mustard, mix with hot water only. Make into a paste, and spread it on a rag, and apply. The brown mustard contains the husks as well as the seeds, and the acrid oil in them, of which oil the vinegar will destroy the efficacy. Let it remain on some eight or ten minutes, or so long as the pain or stinging is not very sharp; but in cases where these poultices are applied to a person who is unconscious, we must not allow the mustard plaster to remain longer than an hour, or gangrene might ensue. If redness, without pain, is wanted, mix with the paste a drachm or 60 drops of tincture of opium, or double that quantity of tincture of henbane. These diminish the pain, but do not impair the efficient action of the mustard.

CROTON OIL

is often applied in deep-seated pain or disease; one part of this oil to five parts of olive oil. Rub the skin first with a piece of flannel, dipped in vinegar of the strong kind, till the skin reddens; then rub in the oil, and repeat every six hours, till some small points of eruption or pimples appear; cease then to rub; the pimples fill with liquid, dry, and the scarfskin scales off.

If these yellow-headed pimples, which are made to appear by rubbing in croton oil, tartar emetic ointment, or solution, give much trouble, or cause too much irritation, warm bread and water poultices, or of linseed meal, will soon remove it.

These applications should be made in the morning, so that the night's rest may not be broken in upon.

BLISTERS.

Blistering plaster should be always kept on hand, ready for spreading, as it is prepared in the shops. This plaster is to be spread over a piece of leather, or even brown paper, to the thickness of a dime; then wash the part to be blistered with soap and water, rub dry with a rough towel, apply the plaster, and keep it

on the part by strips of sticking plaster, but so as to press but slightly on the blister, otherwise the blister will not rise.

If the patient is afflicted with difficulty or irritation in passing his urine, or has a tendency so to suffer, or even if he be of an irritable habit, the blister had better be taken off in about six hours after it has been applied; or an edge or corner may be lifted up, and if the skin begins to redden, or is become red, take it off. The blister will still rise, and no strangury is probable. And it is as well to cover the blistering plaster with gauze or some silver paper, moistened with oil, and so apply it. This is better than having to drink so very freely of barley-water, etc.; still, these drinks must be taken, if there is any pain or difficulty in passing the water.

It should be applied on going to bed; it will not prevent sleep, and by the morning the work is done.

If people are very sensitive, or are afraid of the pain, mix five or six grains of extract of henbane with the plaster.

An *immediate blister* may be made by applying steam to the part, but this may be dangerous; another way is to heat a piece of polished metal, tolerably thick, so as to retain the heat some minutes, in boiling water, and apply it to the part affected. Also by nitric acid.

Blister by Lunar Caustic.—Mark the outline of the proposed blister with ink on the skin, then moisten the bottom of the stick of caustic, and pencil over the part, across and in all directions, till the part is covered. It leaves a black stain on drying, and matter forms under the outer skin. No dressing is required, but merely making a small hole at the lowermost point of the blister.

In dressing a common blister, let out the fluid by a small opening; but do not cut off the raised skin unless we want to keep up an open or perpetual blister. Dress with spermaceti ointment, spread on the soft side of the lint, and it will soon heal, probably. To keep the blistered surface open, it is often dressed with savin cerate; but many can not bear the irritation. In applying this cerate, we must always, at every dressing, remove the film that forms over the blistered surface; otherwise the part dries and heals. To remove this film, we must apply a hot poultice for four or six hours, or a hot fomentation, to loosen the film, which can then be removed.

In some habits, after some diseases, which have left this skin weak, and in many children, blisters will often not only refuse to

heal readily, but they are followed by gangrene, and here we must poultice with charcoal or yeast poultice, give ammonia and bark, support the strength, etc. (See GANGRENE, Chapter IV.) This teaches us to be cautious with respect to blistering young children, or applying blisters in severe cases of measles, scarlet fever or other skin diseases, or where even great general debility is manifest.

POULTICES

enable us to apply moisture and heat, and are applicable where fomentations are usually required. They should not be heavy, nor yet very bulky; but the great point to be attended to is their frequent renewal. Poultices are necessary when an inflamed part throbs and forms matter (discharge); then the sooner the matter is brought to a head, as it is called, the better, and the warmth and moisture of poultices promote suppuration. After the matter has burst forth, or the part been opened, a few more poultices should be applied, to clear the part completely.

But there are swellings to which poultices must not be applied; they are called aneurisms, and each aneurism consists in a permanent dilatation of an artery, sometimes produced by external violence, at others by debility or some disease in the coats of an artery.

The symptoms are, a swelling in the course of an artery, which beats like the pulse, or, as it is phrased, pulsates; and, on placing the ear to the swelling, a puffing noise may often be heard.

It might readily be imagined easy to distinguish a swelling of this nature from any common swelling, but often it is very difficult to do so, and even experienced surgeons have been deceived; and non-professional persons might easily endanger life, by first poulticing, and then using the lancet, or something else, to open the swelling. A gland, or any hard swelling, when situated over the course of an artery, seems to pulsate, being raised at every pulsation of the blood-vessel beneath it; here aneurism is supposed to exist when it does not.

The rule of safety is, never to meddle with any swellings which beat or pulsate, like the vessel at the wrist, called the pulse. Do not poultice, nor apply any thing; but merely protect from pressure or from a blow; maintain rest and quietness, and consult a surgeon as soon as convenient.

Bread and Water Poultice.—Pour boiling water over a thick slice of bread, having previously removed the crust. Soften without pressure, by stirring it about; then drain, and spread it on a rag, as hot as possible, and apply. If the poultice do not require very frequent changing, we should add some lard, to keep it moist and prevent lumps.

Oatmeal Poultice.—Keep some water boiling in a pan, and add oatmeal gradually, and in small quantities, until the poultice is thick enough. Lard may be added to this, as to the one before.

Arrowroot Poultice.—Mix two or more table-spoonfuls of arrowroot with cold water, till it is all united; then add boiling water enough, until a thick, jelly-like paste is made. This is an excellent application, and very soothing for irritable, tender sores.

Alum Poultice.—Mix sixty grains of alum with the whites of two eggs, till they form one body. This is useful for black eyes from bruises.

Charcoal Poultice.—This consists of two ounces of bread, an ounce and a quarter of linseed meal, powdered charcoal three drachms, and ten ounces of boiling water.

The bread stands near the fire in the water for some time; mix it, and add the linseed by degrees. When well mixed, add and mix in two drachms of the charcoal, and sprinkle the other drachm over the surface. Or any common poultice may be made, and charcoal added.

This is useful in gangrene, and in stinking sores, or ill-smelling discharges, as where pieces of bone are coming away from a leg.

Yeast Poultice.—Of beer yeast and water, heated to one hundred degrees, of each five ounces, or some say, eight ounces; flour, a pound. Mix the yeast with the water, and add gradually the flour, stirring assiduously. Place it near the fire until it rises.

Useful in cases similar to the preceding, of foul, fetid, irritable ulcers.

Hemlock Poultice.—Of extract of hemlock half an ounce, boiling water half a pint; add linseed meal enough to make a poultice. For irritable painful sores.

Linseed Meal Poultice.—Of boiling water ten ounces, powdered linseed four and half ounces, or more if necessary. Add the linseed to the water, stirring constantly.

A good poultice, but should be often renewed. Some deem it more irritating to the skin than the bread and water or arrowroot

poultice. The husk of the linseed contains oil, and this adapts it for poultices.

Carrot Poultice.—Bruise boiled carrots into a pulp, and apply it—to foul, irritable ulcers.

Cataplasm of Chlorinated Soda.—Of boiling water, six ounces; powdered linseed, four and a half ounces; solution of chlorinated soda, two ounces; stirring constantly; add the linseed gradually to the water, then add the soda. Applied to foul ulcers, to correct foul discharges.

Mustard Poultice.—Of tepid (not boiling) water, ten ounces; powdered linseed and mustard, of each two and a half ounces, or what may be necessary. Mix the powders well, and add them gradually to the water, stirring well.

Boiling water would lessen the acrimony of the mustard, so it should be only tepid, this poultice acting by its irritating qualities rather than by its heat.

It should be applied to soles of the feet in low or typhus fever, when delirium or stupor is present, in apoplexy and diseases of the head, and in deep-seated inflammatory pains.

It should be spread on cloths, to the thickness of half an inch, and left on the part until redness is excited, but it should not be left on so long as to cause blistering. It is an excellent application where a speedy effect is required.

The Onion Poultice.—This is made like the carrot poultice. It is highly stimulant, and well adapted to bring forward indolent swellings, etc.

A lump of figs is the most ancient poultice on record. (See 2d book of Kings, chap. xx., ver. 7.)

FOMENTATIONS.

Like poultices, apply heat and moisture; the best consists of flannel cloths, wrung out of boiling water by two sticks turned in opposite directions. Shake them up, and lay these flannels lightly over the part, and the heat is retained a long time. Two pieces of flannel should be kept in readiness, each about two and a half or three yards long, with the ends sewed together to admit of the boiling water being wrung out of them; the coarser the flannel the better, as it retains the heat better, and white flannel is preferable to colored.

Fomentations with poppy heads are liked by some persons; but the heat and moisture are the chief, if not sole agents. It may be wise sometimes to employ them; they may act through the mind.

STUPES.

It is sometimes of benefit to stupe a part, as in eye disease. The patient should operate for himself, by putting a piece of flannel in the hollow of his hand; wring it out of boiling water first, and then let sixty drops, or a tea-spoonful of tincture of opium, or of henbane, or of hemlock, be poured on the flannel, and held at a proper distance, so that the vapor can be safely received, and allowed to rise to the eye or part affected.

Fomentations and stupes are the means of applying warm vapor and liquids, but there is a powerful aid toward the prevention of disease, and the strengthening of weakly, delicate habits, in the application of cold water sponging. The chest should be sponged night and morning, back and front. Parents often object, on the ground that their children are too delicate, etc., but if we add a little spirit to the water, they become reconciled to the application. A bracing and tonic influence is thus exerted over the nerves; and disease may be kept off, or will be better borne when it has attacked.

An alcoholic lotion, consisting of one part of spirits of wine and five parts of water, has been strongly recommended as a successful preventive of consumption. It is applied by means of six folds of linen, three inches broad, which are tightly stretched over the upper part of the chest, and over which one fold of flannel should be put.

Both this lotion and cold sponging should be tried in all cases of debility and of delicacy of habit.

Frictions with the naked hand, or with embrocations, or with the flesh-brush or gloves, are useful in indolent glands or swellings. The strokes should be brisk, with the tips of the fingers, and 120 in a minute. A little hair powder or flour will prevent the skin from suffering. In or after a bath they are useful; and in cases of deep-seated pains, friction with a liniment composed of equal parts of oil of turpentine and tincture of opium, will often give temporary relief, or ten grains of opium powdered, rubbed in a mortar with one ounce and a quarter of olive oil. A dessert-

spoonful of either should be poured into the palm of the hand, and used each time.

Slow, gentle, and equal friction will often bring on sleep; and it is useful to know this fact; children may often thus be put to sleep. Shampooing and percussion are good substitutes for exercise when persons are confined to their beds or couches.

MEDICINES, ANTACIDS, AND THEIR DOSES.

	DOSES.	
Liquor of potash.....	10 drops to	30 well diluted.
Carbonate of potash.....	10 grains to	30.
Carbonate of soda	30 grains to	60.
Subcarbonate of ammonia.....	5 grains to	10.
Sal volatile.....	30 drops to	60.
Chalk prepared.....	30 grains to	120.
Magnesia	30 grains to	60.
Carbonate of magnesia.....	60 grains to	1 ounce.
Hard soap or Spanish soap....	5 grains to	30.

Chalk Mixture against Diarrhea.

Prepared chalk.....	$\frac{1}{2}$ oz.
Sugar.....	$\frac{1}{2}$ oz.
Gum arabic.....	$\frac{1}{2}$ oz.
Water.....	1 pint.

Rub the gum arabic into powder; add the chalk, then the sugar; lastly, add the water by small quantities, in a mortar, rubbing all the while until an emulsion is formed. Tincture of opium, or of catechu, or of kino, may be added in obstinate cases. The opium for bearing-down stools especially, fifteen to twenty drops of tincture of opium for a dose. Of the other tinctures, thirty drops for a dose.

Gregory's Powder consists of

Powdered rhubarb.....	$\frac{1}{2}$ oz.
Calcined magnesia	1 oz.
Ginger (powdered).....	$\frac{1}{4}$ oz.

Rub well together, and keep in a well-stoppered bottle, in a dry place.

The Poor Man's Mixture for Stomach Pains and Acid with Wind.

Rhubarb.....	60 grs.
Calcined magnesia.....	90 grs.
Ginger (powdered).....	20 grs.

Mix, and add one pint of peppermint water; and of tincture of capsicum, tincture of opium, and of spirits of sulphuric ether, each sixty drops; a table-spoonful two or three times a day.

These medicines act chemically, by neutralizing the acid in the stomach and bowels. they are palliatives, removing the effects of disease only.

WORM MEDICINES

are of three kinds—those which remove the slime of worms mechanically and by a purgative action; those which strengthen the bowels, and so prevent the formation of slime; and those which kill the worms, as turpentine.

	DOSES.
Calomel.....	5 to 10 grs.
Black sulphuret of mercury.....	5 to 30 grs.
Iron filings.....	2 to 60 grs.
Carbonate of iron.....	2 to 240 grs.
Tin filings.....	60 to 240 grs.
Tansy leaves.....	30 to 60 grs.
Cabbage-tree bark.....	20 to 40 grs.
Assafetida	10 to 30 grs.
Scammony.....	5 to 10 grs.
Rue	10 to 60 grs.
Spirits of turpentine.....	10 drops to 1 oz
Olive oil	$\frac{1}{2}$ oz. to 8 oz.
Cowhage	5 to 10 grs.
Wormwood	20 to 60 grs.
Carolina pink.....	10 to 40 grs.
Male fern-root.....	60 to 240 grs.
Gamboge.....	3 to 20 grs.
Garlic.....	60 to 120 grs.
Camphor.....	2 to 20 grs.
Sagapenum	10 to 30 grs.

APERIENTS,

or laxatives, act by unloading the bowels of offensive matter, without exerting any considerable effect on the vessels of the bowels, or on the secretions of the liver, etc. They would seem merely to stimulate the muscular fibers of the bowels, and so cause a quick expulsion of their contents.

	DOSES.
Manna.....	$\frac{1}{2}$ oz. to 2 oz.
Casia pulp.....	$\frac{1}{2}$ oz. to $1\frac{1}{2}$ oz.
Charcoal in fetid belchings.....	10 to 20 grs.
Magnesia.....	30 to 60 grs.
Carbonate of magnesia.....	30 to 120 grs.
Sulphur.....	30 to 120 grs.
Castor oil and seeds.....	$\frac{1}{2}$ oz. to 1 oz.
Tamarinds.....	1 dr. to 1 oz.
Dandelion root and herb.....	30 to 60 grs.
Hard soap.....	5 to 30 grs.
Carbonate of soda.....	10 to 30 grs.
Tartarized soda.....	60 grs. to 1 oz.
Cream of tartar.....	60 grs. to 1 oz.
Croton oil.....	$\frac{1}{2}$ drop to 2 drops,

which may be dropped on the tongue.

CATHARTICS.

Some act mildly, others more sharply; some lower the pulse, and give rise to a feeling of cold; such are saline purges, best adapted for fevers; others are more tonic, as aloes, rhubarb, etc.; others are stimulant. Purgatives cause irritation, and lead to the formation of indigestion, by causing the secretion of hastily-formed, and, therefore, imperfect bile, if they are too frequently taken. Exposure to cold air should be avoided when a purgative has been taken. When saline cathartics and castor-oil are given, demulcent liquids should be drank warm; but if Epsom salts be given, give it in a small quantity of water, and in an hour afterward a basin of weak tea or warm gruel should be taken, which will carry down the bile flowing out of the gall ducts, which have been stimulated by the salts.

When pills have been given, diluents should not be taken till after the first evacuation.

Cathartic Pills.—Of compound extract of colocynth, 10 grains. Make into 2 pills. To be taken on going to bed; next morning, a seidlitz powder, or a table-spoonful of Epsom salts, with some powdered ginger, or a few drops of essence of ginger.

Croton Oil Pills.—Of croton oil, 1 drop; crumb of bread enough to make a pill; or, in apoplexy, 1 or 2 drops may be dropped on the tongue when the power of swallowing is lost.

Compound Cathartic Pills.—Of jalap, powdered, and calomel, each 45 grains; gamboge, 10 grains. Mix well; add extract of colocynth, compound, 60 grains. Make this into five-grain pills. Excellent for torpid liver. One pill acts mildly, three very actively.

Mercurial Cathartic Pills.—Of compound extract of colocynth, 4 grains; of calomel, 1 to 2 grains; of blue pill, 3 grs. Make up two pills, to be taken at bedtime. Useful when the liver is torpid and bowels sluggish; the motions clayey.

Blue Pill.—Five grains of this, at night, for a few nights; or alternate nights, and a quickening draught in the morning, in bilious disorders.

Pills of Aloes and Myrrh.—Of socotrine aloes, $\frac{1}{2}$ ounce; of saffron and of myrrh, each 2 drachms. Make into pills, weighing 5 grains each. For females who have irregular or deficient periods, or have sluggish lower bowels.

Pills of Aloes with Ginger.—Of aloes, $\frac{1}{2}$ ounce; powdered ginger, 1 drachm; hard soap, $\frac{1}{2}$ ounce; oil of peppermint, 30 drops. Make into five-grain pills. A warm stomachic purgative, or extract of gentian may be added.

Aloes and soap, in equal parts, with syrup, if necessary, is a good form.

Compound Rhubarb Pills.—Of rhubarb, $\frac{1}{2}$ ounce; of aloes, 3 drachms; of myrrh, $\frac{1}{2}$ ounce; oil of peppermint, 30 drops. Beat into a mass with syrup of orange-peel, and make into five-grain pills. Two for a dose.

Gamboge Pills.—Of Gamboge, aloes, and compound cinnamon powder, each 60 grains; soap, $\frac{1}{4}$ ounce. Make into a mass, and into five-grain pills. These are for obstinate costiveness.

Powdered jalap may be added with good effect.

Elaterium Pills.—Of elaterium, 1 grain; extract of colocynth, 20 grains. Make six pills. This often acts violently. Given in cases of dropsy.

A Black Draught.—Of Epsom salts, $\frac{1}{2}$ ounce; compound infusion of senna, $1\frac{1}{2}$ ounce; compound tincture of cardamoms, 60 drops. Mix. To be taken in the morning.

A more active Draught.—Add to this 1 drachm of tincture of jalap.

Cordial Aperient Tincture.—Of tincture of senna, seven parts; of wine of aloes, one part. Mix. A table-spoonful of this, at

bedtime, acts well next morning, usually, and is fitted for gouty and cold habits.

Not so well adapted where there are piles.

Aperient for those afflicted with Piles.—Of sulphur, of powdered jalap, and of cream of tartar, each, $\frac{1}{2}$ ounce; of compound cinnamon powder, 2 drachms; niter, 1 drachm. Mix. A tea-spoonful, or two or three, in water, whenever necessary. Or this: Of sulphur and of tartarized soda, each, $\frac{1}{2}$ ounce. To make four doses; one night and morning, till a gentle action ensues.

A pleasant Aperient.—Of carbonate of magnesia, 5 drachms; of distilled water, 16 ounces. Dissolve 1 ounce of citric acid in 4 ounces of distilled water; add 2 ounces of syrup of lemons. Then mix the two together, in a strong bottle, such as is fit for holding champagne; cork over, and tie over as well. Keep the bottle in cold water, or in the cold, till wanted. A fourth or sixth part for a dose, every four or six hours, till a proper action ensues. This may be called a champagne aperient.

Manna and Epsom Salts.—Of Epsom salts, 1 ounce; manna, $\frac{1}{2}$ ounce; compound infusion of senna, $7\frac{1}{2}$ ounces; tincture of cardamoms, $\frac{1}{2}$ ounce. Mix, by rubbing the manna gradually into the infusion. Two or three table-spoonfuls for a dose.

Baume de Vie, or Compound Decoction of Aloes.—Of liquorice root, $\frac{1}{2}$ ounce; subcarbonate of potash, 40 grains; aloes, myrrh, and saffron, each 60 grains; water, 1 pint. Boil to 12 ounces, and strain; when cold, add 4 ounces of tincture of cardamoms.

Dose, a wine-glassful once a day, in the morning, or when necessary.

A useful Aperient.—Of jalap root, 1 to 2 drachms; of compound infusion of orange-peel, 6 oz. Let it stand for a few hours. Two table-spoonfuls for a dose. Epsom salts might be added, if desired.

Infusion of senna.—Of senna leaves, 15 drachms; of ginger, bruised, 80 grains; boiling water, 1 pint. Let it stand in a covered vessel for an hour or two; then strain. The ginger corrects the griping quality of the senna.

Compound infusion of Senna.—Of tamarinds, 1 oz; of senna leaves, 1 drachm; coriander seeds, bruised, 30 grains; sugar, $\frac{1}{2}$ oz.; boiling water, 8 oz. Let it stand on the hob, in a covered vessel not glazed with lead, for 4 hours; then strain.

Mild Aperient.—Of tartarized potash, 1 to 2 drachms; com-

pound infusion of senna, 1 oz.; tincture of cardamoms, 1 drachm. To be taken at bedtime, or early before breakfast.

EMETICS.

Emetics evacuate the contents of the stomach, but they do a great deal more; they promote sweating in fevers; they favor expectoration in disorders of the lungs; they promote absorption of the fluid in cases of dropsy, and they help, by the commotion they excite in the body, to remove obstructions in the interior of the body, as in jaundice and in torpor of the liver; they also favor the return of the periods; they allay the spasms in asthma, and check discharges of blood from either the lungs or womb, but they are best given, for this latter purpose, in small doses, so as to excite a feeling of sickness, and not vomiting. In dysentery, also, emetics have been useful.

But they should not be given when there is internal inflammation; in fullness of the head and its vessels; in advanced stages of pregnancy; in persons ruptured, nor suffering from prolapse of the womb; nor in persons who have weak and delicate stomachs.

The early evening is the best time to give emetics, if a choice be left; for sleep will be grateful after the action of vomiting is over. The person should walk about, if he can, until the vomiting comes on, and then he may drink of tepid water to encourage the vomiting, and render it easy; but too much water must not be drank, or the stomach will be over-distended.

	DOSES.
Ipecacuanha	10 to 30 grs.
Sulphate of copper	$\frac{1}{4}$ to 5 grs.
Sulphate of zinc	10 to 30 grs.
Tartarized antimony	$\frac{1}{4}$ to 3 grs.

Best Emetic.—Of powder of ipecacuanha, 20 grains; tartarized antimony, 1 grain. Mix.

CORDIALS, STIMULANTS, AND TONICS.

Stimulants rouse the energy of the system, and support the drooping powers of life; tonics, also, counteract debility, and give strength and energy to the moving fibers, but do not stimulate materially.

STIMULANTS.

	DOSES.	
Arnica.....	5	to 10 grs.
Horseradish.....	20	to 60 grs.
Ammonia.....	5	to 20 grs.
Assafetida.....	10	to 30 grs.
Camphor.....	5	to 30 grs.
Cantharides.....	$\frac{1}{4}$	to 3 grs.
Wine, capsicum, cloves, cinnamon; doses need not be specified.		
Musk.....	3	to 30 grs.
Nutmeg.....	5	to 15 grs.
Pimenta and pepper, according to taste.		
Mustard.....	60	to 240 grs.
Valerian.....	30	to 120 grs.
Ginger.....	30 grs. to a tea-spoonful.	
Ether.....	30	to 120 drops.

Strong Camphor Mixture.—Of camphor, 25 grains; spirits of wine, 5 drops. Rub. Add gum arabic, powdered, half an ounce; lemon-juice, half an ounce; water, or mint-water, $7\frac{1}{2}$ ounces. Mix. Two table-spoonfuls for a dose.

Others make it thus: Of camphor, 12 grains; carbonate of magnesia, 30 grains; rub together, and gradually add six ounces of water.

Or this: Camphor, 60 grains; carbonate of magnesia, $\frac{1}{4}$ oz.; rub, and add water, 1 pint.

Cordial Mixture for Colic, Looseness of Bowels, and Pain in the Stomach.—Of aromatic confection, 180 grains; sal volatile, $\frac{1}{2}$ oz.; tincture of ginger, 120 drops; oil of peppermint, 5 drops; spirits of wine, 30 drops; syrup of orange-peel, $\frac{1}{2}$ oz.; of pure water, 12 ounces; add tincture of cardamoms, $\frac{1}{2}$ oz.; of catechu, 120 drops; cinnamon, 120 drops; opium, 60 drops. Two table-spoonfuls for a dose. The oil is to be mixed with the spirits of wine first; the confection to be mixed with water gradually.

Camphor Julep.—Put a small bit of camphor into a pint of distilled water.

Stimulant Mixture.—Of carbonate of ammonia, 30 grains; camphor mixture, 7 ounces; syrup, or of syrup of orange-peel, 1 oz. Two table-spoonfuls for a dose, two or three times a day.

Half an ounce of sulphuric ether may be added to this mixture to increase the stimulant power.

Brandy Mixture (a cordial support).—Of brandy and cinnamon water, each 4 oz.; the whites of two raw eggs; sugar, $\frac{1}{2}$ oz.; oil of cinnamon, 2 drops. Mix.

This is useful in the exhaustion of low fevers, and in great debility.

TONICS.

The bitters gentian, calumba, quassia, angustura, quinine, hop, oxide of zinc, sulphate of zinc, various preparations of iron. These are the most used.

Infusion of Calumba.—Of calumba root, cut into small pieces, $\frac{1}{4}$ of an ounce; boiling water, 8 ounces. Let the whole stand for two hours or more on the hob in a covered vessel, and strain. A wine-glassful twice or thrice a day.

Infusion of Chamomile.—Of chamomile flowers, $\frac{1}{4}$ of an ounce; boiling water, $\frac{1}{2}$ pint. Let it stand as the foregoing. This is used cold in stomach complaints. In doses like those of calumba, it is drank warm, either alone to excite gentle vomiting, or to assist the operation of other emetics.

Compound Infusion of Gentian.—Of gentian root, cut small, dried orange-peel, each, 60 grains; lemon-peel, 2 drachms; boiling water, 13 oz. Let it stand like the calumba. Given in indigestion; and wherever tonics are wanting, alkalies or acids may be added, 20 or 25 grains of the former to each dose, or ten drops of the dilute nitric acid.

Compound Infusion of Orange-peel.—Of dried orange-peel, $\frac{1}{4}$ oz.; of recent lemon-peel, 60 grains; of cloves, bruised, 30 grains; boiling water, 8 oz. Let it stand for fifteen up to sixty minutes in a covered vessel; when cold, strain.

Infusion of Cloves.—Of bruised cloves, 60 grains; boiling water, 8 oz. Let it stand, like the preceding, for two hours, and strain. Stimulant, tonic and stomachic.

Infusion of Cascarilla.—Of cascarilla root, bruised, $\frac{1}{2}$ oz.; boiling water, 8 oz. Prepare as before.

Infusion of Peruvian Bark.—Of pale Peruvian bark, bruised, $\frac{1}{2}$ oz.; boiling water, 8 oz. Let it stand for two hours, and strain.

In indigestion, and in convalescence, it is chiefly used as a vehicle.

Infusion of Angustura Bark.—Of bruised angustura bark, $\frac{1}{4}$ oz.; boiling water, 8 oz. Prepare as before.

Compound Infusion of Mint.—Of dried mint leaves, $\frac{1}{4}$ oz.; boiling water, 8 to 10 oz. Boil, so as to strain off 6 oz. When cold, strain, and add of white sugar, $\frac{1}{4}$ oz.; oil of mint, 3 drops; dissolved in $\frac{1}{2}$ oz. of tincture of cardamoms. Mix.

Infusion of Quassia.—Of quassia wood, cut small, 30 grains; of boiling water, 8 oz. Let the fluid stand for two hours, then strain.

A very pure bitter, useful in several disorders; in bilious fevers, united with the carbonates of potash or soda, 20 or 30 grains to each dose; in hysterics, camphor and tincture of valerian must be added; in gout, with aromatics and ginger; and in indigestion, united with 1 or 2 grains of sulphate of zinc, or with 8 or 10 drops of the mineral acids.

Infusion of Valerian.—Of valerian root, bruised and rubbed into a thick powder, $\frac{1}{4}$ oz.; of boiling water, 8 oz. Let it stand for an hour, and strain.

In hysteria, 3 or 4 table-spoonfuls two or three times a day; and the stomach will often bear valerian in this form which it would not in any other.

Quinine Mixture.—Of infusion of gentian or of orange-peel, $7\frac{1}{2}$ oz.; sulphate of quinine, 8 grains to 20; dilute sulphuric acid, 40 drops; tincture of cardamoms, or of calumba, 2 drachms. An eighth part two or three times a day. This is often given in agues, and it may be given also in

Infusion of Roses.—Of dried petals of the red rose, $\frac{1}{2}$ oz.; boiling water, $2\frac{1}{2}$ pints; dilute sulphuric acid, 3 drachms; sugar, $1\frac{1}{2}$ oz. Pour the water on the rose leaves, add the acid, let it stand in a glass vessel for half an hour or an hour; strain, and add the sugar.

This and the dilute sulphuric acid check and stop excessive and exhausting sweats. (See CONSUMPTION.)

Dilute sulphuric acid is made by adding to $1\frac{1}{2}$ oz. of the strong acid, $14\frac{1}{2}$ oz. of distilled water; 10 to 30 drops are a dose.

Dilute muriatic acid is made by diluting the strong acid with equal quantity of distilled water, and dilute nitric acid by 1 oz. of strong acid to 9 oz. of distilled water.

All these acids are tonics, the last especially; in fevers for drink, in bilious ailments, indigestion, etc., 10 to 20 drops.

Compound Wine of Quinine.—Of sulphate of quinine, 20 grains; of citric acid, 10 grains; distilled water, 1 oz. Mix and dissolve;

then add of good orange wine, 19 oz. A clear solution is formed; two table-spoonfuls for a dose, two or three times a day.

DILUENTS.

These increase the proportion of fluids in the system, and this can only be done by watery liquors. Water is the only diluent. Many medicines are given in certain diluents; but many of these diluents have been mentioned in the first chapter, as barley-water, toast water, etc.

DIURETICS.

These augment the secretion of urine, and probably act by stimulating the secreting vessels of the kidneys; the saline diuretics seem to act in this manner, being received into the circulation, and passing off through the kidneys. Diuretics separate the watery part of the blood, and thus they may promote absorption over the entire body. They are very efficacious in dropsy, and when they are efficacious, they afford us the best way of removing dropsical fluid.

But diuretics may often help us in other disorders, as in gravel and stone; they may diminish fullness of vessels, and check profuse perspiration. The chief diuretics which a non-professional person may use are, the acetate of potash (a very valuable remedy in many diseases), dose, 20 grains to 40; cream of tartar, dose, 1 drachm to 8; carbonate of potash, dose, 10 to 30 grains; nitrate of potash, dose, 5 to 10 grains; the carbonate of soda, dose, 10 to 20 grains; sweet spirits of niter, dose, 30 drops to 2 drachms (this last is also very useful); broom-tops, dose, 10 grains to 60. Digitalis, and various other diuretics, should only be taken under a medical man's superintendence.

Forms of diuretic medicines:

Infusion of Horseradish Root.—Of horseradish, sliced, and mustard seed, bruised, each 1 oz.; compound spirit of horseradish, 1 oz.; boiling water (distilled), a pint. Put the root and seeds in the water, for two hours, in a covered vessel, and strain; then add the spirit when cold. Dose, two to four table-spoonfuls three times a day, in dropsies, with debility, and after agues; also in palsy. The acetate of potash, 30 grains to each dose, or from 30 to 60 drops of sweet spirits of niter may be added.

Diuretic Pills.—Of blue pill, 30 grains ; compound squill pill, 60 grains. Make into 20 or 24 pills. Two every night, but the gums must be watched so as to avoid a sore mouth. Stop as soon as the gums redden or swell, or there is a taste or smell in the mouth. During the administration of diuretics, keep the body cool, and exercise and drinking pretty freely of water and diluents will help.

DIAPHORETICS, SUDORIFICS, OR SWEAT PROMOTERS.

These medicines increase the discharge by the skin, and so lower both fever and inflammation. The first two words have a similar meaning, only differing in the degree of the effects produced—the first merely bringing gentle respiration on a dry, feverish skin ; the second exciting sweating.

To produce their effect, the free drinking of tepid drinks or diluents should be encouraged ; and confinement to bed is usually essential, or else lying down, covered by light blankets, for heavy blankets or coverings may rather check perspiration than promote it. The patient's shirt should be also of flannel or calico ; no cold drinks, nor acid drinks, are to be allowed.

When the person has perspired long enough, or we wish to check it, caution is necessary ; removal from the damp bed, covering with a dry blanket, and drying with soft, warm towels are to be looked to, avoiding all draughts or admission of cold air.

The real James's powder is one of the best diaphoretics we can employ ; or, failing that, we may give small doses of tartar emetic, 1 grain of which may be dissolved in 8 ounces of distilled water, with some sugar (to taste), and one table-spoonful given every 4 hours. A slight feeling of sickness may come on first, and then the perspiration ; 5 to 10 grains of niter might be added to each dose, but in typhoid fever these antimonials are too debilitating, and can, in such cases, only be given while the strength remains unimpaired, or while the fever is high.

Another useful remedy is the liquor of acetate of ammonia. This is made by adding 30 grains of carbonate of ammonia, 2 ounces of acetic acid, or 1 ounce to 15 grains of ammonia. The dose of this is 1 or 2 drachms, 60 to 120 drops every third or fourth hour, with syrup of orange-peel, or simple syrup ; and niter may be added to each dose of this, as in the preceding case.

Some give carbonate of soda or potash, 30 grains, with tartaric or citric acid, or lemon-juice, enough to prevent any effervescence; then add syrup; and the ounce or ounce and a half of vehicle may be either camphor mixture, or mint, or peppermint, or plain water. When there is much pain, 15 to 20 drops of tincture of opium might be added, at bedtime chiefly.

Another Draught.—Of carbonate of ammonia, 10 grains; of lemon-juice, 2 drachms; of syrup, 60 drops; water, or mint-water, an ounce.

Guaiacum Draught.—Of resin of guaiacum, 10 grains; of Dover's powder, 5 grains; of tartar emetic, one-eighth of a grain; of syrup, 1 drachm; of water, 1 ounce; in acute rheumatism. But if we give this often during the day, the dose of Dover's powder should be 2 grains only.

ALTERATIVES.

These medicines act slowly, and are meant to effect a gradual change in any morbid or faulty secretion, or in fevers, or inflammations. The best of all is the form of powders, recommended in the Fourth Chapter, against inflammations, especially of the chest and some inward parts. Where the lancet can not be efficiently employed, these powders must form the chief reliance.

Powders against Inflammations, and some Fevers.—Of calomel, 32 grains to 64; of tartar emetic, 1 grain; rub these very well together, then add of powdered tragacanth or gum arabic, 60 or 80 grains; mix again by thoroughly rubbing in a mortar; then divide into 16 powders; one every three or four hours, until a coppery taste, or swelled or reddened gums begin to appear; then stop, and give a gargle of tincture of myrrh, with alum or borax, and syrup, or honey and water.

If these calomel powders cause purging, add powder of chalk and opium, 2 grains, or else one quarter of a grain of opium to each dose.

If the inflammation is in an organ essential to life, such as the brain, or lungs, or is violent in degree, give the 4-grain powders every three hours, so as to affect the gums as soon as possible, only taking care to prevent salivation to a great extent. Take care to avoid cold air, or cold or damp, while the person is taking or feeling the effects of these powders.

After salivation, besides a gargle, we should give an ounce of bitter infusion of calumba, with an ounce of camphor mixture, and 20 drops of sal volatile, two or three times a day, after the inflammation is gone—not before.

Another Alterative Powder.—Of metallic mercury and of levigated (rubbed into powder) antimony, each, 1 ounce; of sulphur, half an ounce. Mix. Of this, 15 to 20 grains is a dose, two or three times a day; and it is given in many eruptions of the skin, of a chronic nature, not attended with fever.

The gray powder, which consists of metallic mercury, 3 ounces, rubbed together with 5 ounces of prepared chalk until the globules have all disappeared, is also an alterative.

Other alteratives, at least such as are called alterative, may be mentioned, but it would not be practically useful to do so.

NARCOTICS AND ANODYNES.

These are remedies which diminish sensibility and irritability, abate pain, and induce sleep, or sometimes a sort of stupor.

The chief of these are opium, powdered, half a grain to 1 or more; or the acetate or hydrochlorate of morphia—of the acetate, one-sixth to one-half grain; of the other, one-fourth to one-half grain for a dose. Henbane (tincture of), 20 to 60 drops; tincture of opium, 15 to 40 drops; tincture of the seeds of meadow saffron; belladonna (dangerous), and anconite (also dangerous, except under proper care). Compound powder of chalk, with opium, contains 1 grain of opium in 40, so 20 to 30 grains is the dose. Dover's powder contains 1 grain of opium in 10, and 5 grains is the dose.

Against gout, especially, and the pains of rheumatism, the tincture of meadow saffron is found very useful. Take of the seeds of meadow saffron half an ounce, bruise them, and put them into 4 ounces of spirits of wine; let it stand 10 or 14 days, then strain; 20 drops, eight times a day, with 20 or 30 grains of carbonate of potash or soda; watch the effects, and as soon as depression of spirits, or relaxing sweats, or looseness of the bowels come on, discontinue; to be given in water, two or three times a day.

Tincture of opium is made by cutting 1 ounce of crude opium into small pieces, and putting them into 16 ounces of proof spirits of wine; let the liquid stand for 10 or 14 days, shaking often; then strain for use.

ANTISPASMODICS

allay inordinate muscular action and violent pain, without exciting insensibility, sleep, or stupor, as narcotics sometimes do.

Ether (sulphuric), 30 drops to 60 ; musk, 1 grain to 60 ; liquor of ammonia, 10 to 15 drops ; assafedita, 5 to 20 grains ; carbonate of ammonia, 5 to 20 grains ; galbanum, 10 to 30 grains ; sagapenum, 10 to 30 grains ; valerian, 20 to 40 grains ; camphor, 1 to 20 grains ; cajeput oil, 1 drop to 5.

These medicines are serviceable in cases of hysteria, and in disorders affecting chiefly the nervous system, as St. Vitus's dance, etc.

ASTRINGENTS

corrugate the parts to which they are applied. They are used both internally and externally—in bleedings, discharges, in fluxes, in whites, etc.

	DOSES.
Dilute sulphuric acid	5 to 30 drops.
Alum	10 to 20 grs.
Sulphate of zinc	1 to 20 grs.
Sulphate of iron	1 to 5 grs.
Sulphate of copper	$\frac{1}{4}$ to 2 grs.
Sugar of lead	$\frac{1}{2}$ to 2 grs.
Extract of catechu	10 to 20 grs.
Kino	10 to 60 grs.
Logwood (extract)	10 to 30 grs.
Oak bark	10 to 30 grs.
Galls	2 to 10 grs.
Lime water	2 to 8 oz.
Whortleberry leaves	10 to 60 grs.
Bistort root	10 to 60 grs.
Pomegranate bark	20 to 60 grs.
Tormentil (decoction of)	$\frac{1}{2}$ to $1\frac{1}{2}$ oz.

Infusion of Buchu Leaves.—Of buchu leaves, 1 ounce ; boiling water, 1 pint ; to stand for 4 hours, then strain ; 3 or 4 table-spoonfuls, two or three times a day, in diarrhea, dysentery, etc. A light tonic, slightly diuretic, and warmly aromatic, from the volatile oil in the glands of the leaves.

Decoction of Whortleberry.—Of whortleberry leaves, 1 ounce ; water (distilled), a pint and a half ; boil down to a pint, and strain.

Half an ounce to 2 ounces, two or three times a day, in affections of the urinary organs, and in exhaustion from discharges from those organs.

Infusion of Pareira.—Of pareira, one-half ounce; of boiling water, 9 ounces; let it stand for two hours, and strain; 2, 3, or 4 table-spoonfuls twice, or thrice daily, in irritation of the bladder, with discharge from it; in catarrh, too tonic slightly, and diuretic.

Infusion of Rhatany.—Of rhatany, 1 ounce; boiling water, 1 pint; after 4 hours, strain. Tonic and astringent in diarrhea, and as a gargle in relaxed throat.

Compound Infusion of Catechu.—Of catechu, three-fourths of an ounce; bruised cinnamon, 1 drachm; boiling water, 1 pint; after 2 hours, strain; 2 to 4 table-spoonfuls after every loose stool in diarrhea, or every three or four hours.

Compound Infusion of Linseed.—Of linseed, bruised, three-fourths of an ounce; liquorice-root, bruised, one-fourth of an ounce; boiling water, 1 pint; after 4 hours in a gentle heat, strain. A tea-cupful occasionally, in catarrhs, coughs, difficulty in making water, and in irritability of the bladder.

Decoction of Liverwort.—Of liverwort, 5 drachms; distilled water, a pint and a half; boil to one pint, and strain; one-half ounce to two ounces, two or three times a day, in coughs, consumption, loss of flesh, whooping-cough. If we want to destroy the bitter taste, steep the liverwort in several waters, adding to each 10 grains of carbonate of potash, before boiling; but some object to depriving it of its bitterness. This decoction possesses some nutritive powers.

Decoction of Sarsaparilla.—Of sarsaparilla, one and one-quarter ounce; boiling water, one pint; boil to half a pint. Of sassafras, Guaiacum, and liquorice-root, each, one-half ounce; mezereon, 60 grains; boil 15 minutes, and strain. In chronic rheumatism, leprosy, some liver affections, 2 table-spoonfuls, or 3 or 4, two or three times a day.

DIRECTIONS TO EMIGRANTS.

To emigrants to various parts of this country, and of the world, the following directions may be found useful :

Wherever the emigrant fixes, he should try to buy or rent land which is cleared, for clearing land is always dangerous. Agues, fevers, etc., are likely to ensue, even when considerable precautions are taken.

The laboring emigrant should likewise avoid laboring early in the morning, on an empty stomach ; he should take some tea or coffee, with meat, bread or bacon, before going out, especially in aguish or feverish districts, for morning and evening are the times in which the bad air lies low upon the ground, and is endowed with most power to produce injurious effects on the constitution. (See First Chapter, where MALARIA is described.)

No forethought, no trouble can be thrown away which are devoted to prevent disease ; the health once impaired may not easily be reëstablished, and without health nothing can be done.

Whenever the emigrant can choose his site, he should avoid low, swampy grounds, especially for fixing his house ; clayey soils and alluvial earth in the bottom of valleys are dangerous, particularly if exposed to the rays of the sun in a hot country ; pools and ditches containing stagnant water, rice grounds, and all marshy surfaces which are at times covered with water, and then left dry, while a hot sun is causing a rapid evaporation from them, are very productive of fevers, both continued and intermittent. (Refer to MALARIA in the Index.)

Those who are robust and of a plethoric (full) habit of body, are often able to resist those influences which cause ague for a longer time than those who are weak and debilitated ; but when to the usual marsh miasms are added the effluvia of decayed animal substances, the former persons seem to be more susceptible, and are sooner attacked by continued fever—often of a fatal kind—than the latter ; wherefore, they should be careful to avoid a too stimulating mode of life ; while those who are of weak and feeble habit, should keep up strength and power by a generous mode of living, though a simple one.

A daily pill of one grain or two grains of quinine during spring and autumn, or while fever is prevalent, would help to protect from ague and from fever; and all who are living in aguish situations should not neglect to take this precaution, at the same time avoiding every thing that would lower the vital powers.

If any one has been exposed to infection, and feels chilly, or a loss of appetite—as if about to be attacked with fever—the attack might be averted sometimes by an emetic, or by a warm aperient, and going to bed, followed by wine, or brandy and water, or by quinine in camphor julep, etc., taken every four hours, until a perspiration breaks forth, when all danger of suffering from a tedious fever is at an end. Fever may thus be often arrested during the stage of invasion, or up to the beginning of the state of hot skin, thirst, and of what is called high or burning fever; but when once this period of reaction is attained, the fever will take its course, and all that then can be done is to guide it to a safe termination, by moderating too much action, or by gently supporting the strength—not so as to stimulate—when there is too little.

Inflammation of the eyes, which disqualifies for work, and may end in loss of sight, is to be guarded against, by wearing always, or when working in, or exposed to the sun's glare, or to clouds of dust, fine wire-gauze goggles; and dysentery, which is another scourge of the emigrant, is to be kept off by flannel worn round the abdomen and loins.

In all cases, and in all parts of the country, the diet should be simple, yet nutritious; and intemperance of every kind must be avoided. Every act of drunkenness may be considered as verifying the old saying, of putting an additional nail into one's coffin.

This is the one debasing and brutalizing habit, which, more than any other, will ruin the best hopes and prospects; which will not only prevent him from rising in life's social scale, but will gradually lower him until he is a lost and ruined man. This is a habit of intoxication, a habit which in many is begun early in life, and never left off, except in some rare instances.

Among other evils, it is the cause of an appalling and fatal disease, called Delirium Tremens, which is thus described:

It begins with lassitude, general indisposition, a feeling of distress at pit of stomach, a want of appetite, nausea, and vomiting, giddiness, *want of sleep*, anxious countenance, and *tremor of the hands*.

In a day or two the countenance shows alarm and suspicion; the eyes are cast about, or fixed in a singular manner; the trembling of the hands increases; irritability comes on, with restlessness. And now, the miserable victim becomes loquacious; says he is very well, though he is tormented with thick-coming fancies, and visions of dogs, of cats, of snakes, rats, mice, insects, and vermin crawling over him, or over his bed; or else he fancies people are coming to rob him, etc. To avoid these illusions he calls for aid, or tries to escape by door or window—is greatly agitated, vociferates, raves, and threatens. He is never at rest, can not bear contradiction, and sometimes becomes furiously delirious.

The pulse varies in these attacks; it may be, in first attacks, and in young, full-blooded subjects, hard, full, and frequent, but it is usually soft, full, and quick, without strength. The skin is of its natural temperature, though constantly perspiring; the tongue is humid, and covered with a white fur, and the bowels are torpid. There is a thirst, demanding cold drinks constantly.

These attacks vary much; some may be slight, and marked by tremors of the hands, threatenings of delirium, illusions, and want of sleep, which pass off in a day or two; in others, these symptoms may continue longer, for six or seven days, or longer, and be more severe; while, in the worst cases, there may be ungovernable mania. And if the attack continues above a month, the mind may become permanently alienated; in full habits, convulsions, or supervening apoplexy, have, in a great many cases, proved fatal.

I have attended several cases occurring in the same person, and have seldom witnessed recovery from the third attack. Many a young man has been carried off, before he had attained his thirtieth year, by this fell destroyer; and those who have suffered from disease of liver, or of other parts, have little chance of escape. I have seen it in sailors, who have, it may be, not long returned from a voyage; have been ever since, almost living in a grog-shop, and eating little or nothing of solid food for days together; and who, notwithstanding a good constitution, and an age almost youthful, are reduced to a state truly awful to behold. These thoughtless men are unintentional suicides.

Causes.—Intoxication, occasional or habitual; sudden abstinence from drink, mental exhaustion from anxiety or study, great losses of blood. The male sex and summer season predispose.

Treatment.—To procure sleep is the grand aim, and many a doctor says of such patients, they must either sleep or die.

There may be some cases of full habits, and some attacks, which threaten apoplexy, where some blood might be taken away by lancet, cupping, or leeches; but all depletions are badly borne in almost all cases.

My method is, to get the bowels cleared of any irritating, foul secretions, by castor-oil and injections, and then give opium as the sheet-anchor. This is a good form:

No. 241. Carbonate of ammoniate..... 5 to 10 grs.
 Tincture of opium 30 to 60 drops.
 Water, or of camphor julep.... 1 oz.
 Mix.

To be given every three or four hours, until sleep comes on.

Others give a grain of opium every hour, and some have given four grains every two hours. From twenty to thirty grains have been swallowed, in some cases, before sleep came on. The smaller doses should be begun with.

The diet must be light and unirritating—animal broths, for instance. Some give drinks of spirits to keep up the stimulus; this I deem unnecessary where we are giving ammonia, camphor, and opium.

One eminent physician advises us to clear the bowels first, then to give three grains of solid opium; and in two or three hours, if no sleep ensue, give one grain every hour till the patient sleeps; but all rely on opium. It may also be administered in injections.

Cold lotions to the head may be applied, if the head is hot.

We must take care not to mistake this disease, which probably consists in a state of nervous irritation and exhaustion, for an attack of inflamed brain; for then we should bleed, purge, leech, and lower the man speedily into his grave.

Delirium tremens is characterized by full, soft pulse; by a tongue moist and creamy; by a sweating skin; by a pale countenance; by tremors or tremblings, and by peculiar illusions and delirium. Inflammation of the brain is attended with very different symptoms.

The two chief dangers to life from disease may be comprised under inflammations and fevers; and should a person be seized with pain anywhere, say in the right side, about the middle of the ribs, the great point to ascertain will be, whether it is a symptom

of inflammation of the chest ; if it is, there is no time to lose, and the most energetic means must be resorted to.

How, then, is inflammation of the internal organs to be ascertained by a non-medical person ?

We shall always find it accompanied with fever, which arises not long after the pain has commenced, viz. : white tongue, quick pulse, etc., and by disturbance of the function of the part affected. For example, the pain in the ribs is accompanied by fever symptoms, and by difficulty of breathing, increase of pain on breathing, perhaps cough, and expectoration. Again, if there is pain in the head, as a sign of inflamed brain, we shall have thirst, hot skin, quick pulse, and the other signs of fever, mixed up with red, ferrety eyes, delirium, or other signs of disturbed function of the brain. Common headache is not usually attended with fever.

So of inflammation of other parts, the situation of the pain, and the presence of fever symptoms, together with those of disturbed function of the part, give warning of inflammation.

In such cases, medical men use the lancet more or less freely, according to the organ inflamed, the intensity of the inflammation, and the state of the patient, as to strength ; but as this can not be done by emigrants, nor by any one who is not professionally educated, they must rely on the powders, which have been here called powders against inflammations and fevers, consisting of calomel, two or three grains each, and one-sixteenth of a grain of tartar emetic. These powders must be given every three or four hours, till the gums are becoming tender or sore or swelled. If they purge, the looseness must not be stopped. The diet must be low, so long as the inflammation continues.

It is true, a sore mouth may result, but then the powders may have prevented loss of life.

The reader is referred to each article for instructions as to treatment in Chapters IV, V, and VI. (See, also, INDEX.)

CHAPTER VIII.

SPECIFIC DISEASES

MILK SICKNESS, OR SICK STOMACH.

THE milk sickness has long been known in some sections of the United States, and these are much more numerous than either books or journals have recorded. It is true that it exists at certain times of the year, in all the States south of Maryland to the Gulf of Mexico, and those whose base rest on that gulf, and from thence through much of the interior valley of the Mississippi to the great lakes on the north. It is fortunate that the localities where this grave form of disease is found, are limited in extent to small spaces. It is not always found in swampy situations, but occasionally occurs on ridges, and level lands considerably elevated; it, however, is but seldom met with on prairies, away from timber, or on grounds that are under cultivation. From what we have seen, we are induced to believe that the natural growth of timber and jungle are necessary to its production. In the great prairie regions of the Mississippi Valley, it is seldom found, but in the neighborhood of the timbered lands, along the streams, or on the low lands bordering the prairies, it is more frequent.

But more of the history of the affection when we come to consider its remote causes. We, in the mean time, will state what the symptoms generally are. Dr. Drake informs us that it "almost invariably commences with general weakness and lassitude, which increase in the most gradual manner. About the same time, or soon after, a dull pain, or rather soreness, begins to affect the calves of the legs, occasionally extending up the thighs. The appetite becomes rather impaired, and in some cases nearly suspended; sensations of a disagreeable kind affecting the stomach; upon taking a little food, however, a greater disposition is generated, and more agreeable feelings are introduced by it throughout the whole sys-

tem." Costiveness now is obstinate, which continues through the disease. The patient is much disposed to sleep. The pulse is frequent, round, and full in this stage, as well as tense. Should the patient now exercise, it has an unfavorable effect, and has a strong tendency to produce vomiting. This symptom almost certainly occurs in this affection, and soon reduces the strength very much, and but too often continues long after the violence of the symptoms has measurably abated, of which we shall see more when we come to the consideration of the disease as we found it. It must, however, be admitted that the symptoms are not very uniform, and we believe they often indicate, from the beginning, much debility, with a frequent and weak pulse, connected with a dry and dark coating on the tongue.

Before laying down the plan of treatment we intend to advise, we shall make some observations on what we believe is the true nature of the disease, and to do this we will first observe that it was our lot to spend a few years of our life in a part of the country where the malady was occasional, so that we saw a number of cases, and heard much said about the disease, both as to its effects upon the human subject and upon the lower animals. It was, forty-five years ago, a general belief, wherever milk sickness existed, that it was caused by some poison eaten by the lower animals, and that the meat of these, by being eaten by any animal, would sicken it, and often cause death. It was believed, too, that the milk of diseased animals, when sucked, would destroy or sicken their young; and that the milk of the cow was the usual medium by which the human subject became affected with the malady, and that sometimes people were sickened by eating the flesh of animals affected by this singular disease. Well, all these opinions were considered with much care by the writer; constant inquiry was made of those who had had, or had seen, the milk sickness, and all that he could learn was an obstinate belief that the human subject only became affected through two mediums—either by the use of the milk of the cow, or of diseased meat of some kind. He believes that the flesh of the hog was not charged with this offense, and thinks that beef was alone believed, with milk, to cause the disease. Now, it is nearly certain that both milk and beef, with probably some other kinds of meat, had the power of producing the sick stomach, but whether these ever produced that particular malady which so often proved fatal, is a question which the writer

did not then decide in his own mind, nor has he been able to do so since. It is, however, true that calves took the disease and died, in cases where they sucked the dam. This fact would go some distance in proving that milk can communicate the disease to other animals. It was believed, in those days, that cows that were milked were apt to recover when their milk was regularly drawn off; there can, indeed, be little doubt that in all cases of fever, either in the human or brute subject, that the frequent abstraction of the milk, where the young are being nourished by it, will render the case less dangerous.

But, as to the supposed fact that the human subject never has the sick-stomach disease unless where either meat or milk has been used as food, the writer feels that, so far as regards himself, he is satisfied that the human race are capable of being acted upon entirely outside of eating meat or drinking milk; for, during the summer of 1821, and ensuing winter, he treated two cases of this disease in men, both of whom had refrained from milk, butter, or meat for months. In these cases, the patients allowed their families to use milk, butter, etc. We recollect perfectly that we then thought the disease was well sent on these men, because of their selfishness toward their families. In both these cases there was a great sense of burning in the stomach, with soreness over it, and the rejection of both drink and food a very short time after being swallowed. One thing which we particularly remarked in these, as in a few other cases, was the coolness of the skin, and weakness of the voice. But more of these *cases* when we come to the treatment. Now, as these cases satisfied us as to the capability of man to take the sick-stomach disease independent of other animals, we more particularly turned our attention to the consideration of what the real cause was, and, in doing this, we found that, although the affection occasionally occurred on dry ridges, or on dryish flat lands, yet these lands were in most part covered with timber; and, although they produced some nourishment for cattle, it could not be compared in its nutrient qualities with grass grown where there was a full admission of the sun's rays, and the surface generally dryer. It was known, too, that the disease was more common in wet or moist situations, and near swamps, than in drier localities. These facts led us to the conclusion that the real cause must be from exhalations from the surface of the earth in certain localities, which had a peculiar influence of a deleterious nature on the health

of animals, and, in short, the affection was a fever mostly affecting the stomach, bowels, etc., and that the nervous system was more affected than is general in other fevers. These conclusions led us to the opinion that it was very possible that the disease might be brought on, or hastened, by the use of the flesh of diseased animals, or by the use of their milk, and that in these latter cases the disease might be more confined to the stomach than when the affection was produced by the local influences which produced them in the lower animals, or in man. We know that great changes have occurred, within our time, in the interior Valley of the Mississippi, as to the intensity of the remitting and intermitting fevers. There are now fewer cases of a malignant character than there were forty years ago, and in many places these fevers have disappeared, or become so continued in their type that the inexperienced are unable to designate them from the continued or typhoid fever of higher and dryer localities. We once saw two fatal cases that were called cases of milk sickness, which ran their course in about three days. These cases were then, in our opinion, those of the congestive type of fever; so that, really, not a few of the cases that passed for milk sickness in early times, in the Mississippi Valley, were simply those of malignant bilious fever. In those days, both the doctors and people had got it into their heads that the lower animals ate some wild weed, which caused the malady; and it would have been about as easy to have convinced them that no witches ever lived, as to make them believe that what was called the milk sickness was but a disease growing out of the common causes of fever, produced by the unhealthy exhalations from the earth. None of them could show the poisonous weed; but they knew that cattle which were better fed than those that ranged the forests were seldom affected by the disease, and that their milk was more wholesome. Those who have observed cattle that ranged the woods in early times, in those regions which have produced the disease under consideration, know how thin they always were, and know how much they diminished in size after two or three generations. It may be said that no such leanness ever existed among the cattle that belonged to the prairies, which is true; but those cattle only have the disease that are allowed to stray among the timber, where the land is low and often wet, where people as well as the lower animals become diseased; because it is a fact that, in the prairie regions, people who live in or near the tim-

bered lands are much more apt to sicken with bilious diseases than those who live in the open prairie. In these latter situations, people seldom or never have the milk disease, and not frequently remitting or intermitting fevers, when compared with those who live in or near the timber. Another argument is, that in those parts of our country where remitting and intermitting fevers are seldom found, the milk sickness is equally unknown. These diseases have scarcely an existence on the western slope of the Alleghanies, from their approaches to Lake Erie to Tennessee; and, although the milk sickness sometimes appears where the ague but seldom occurs, the latter is never far off, and the regions where the former is found are nearly all subject to malarious diseases; so that it seems evident that there is a close connection between the remote causes of the apparently different affections. But we must hasten to the consideration of the treatment of the disease.

Treatment.—We shall first give the views of Professor Dickson, of the Jefferson Medical School of Philadelphia, as to the treatment of milk sickness. This physician has the following observations: “If a case of this nature were to come under my care, I would prefer to treat it as the effect of an acute poison, and one for which no antidote was known. If the stomach were emptied spontaneously of the deleterious food taken, I would wash it with draughts of warm water, or ipecacuanha. I would apply leeches, or cups, to the epigastrium, or abdomen, and give the patient ice and cold fluids. The first stage being past, and excitement continuing and becoming more general, I would resort to venesection, and administer such purgatives as could be best borne, perhaps preferring castor-oil, aiding them with proper enemata (injections). When the bowels had been rendered soluble, I would depend for further advantage upon the mercurials, combining them with moderate doses of opium, and persisting until the gums should become spongy, and the salivary glands be urged to increased secretion.”

Now, this treatment proposed by Dr. Dickson is, in our opinion, in part good—that is, so far as the mercurial course goes; but his first proposition to vomit, for the purpose of emptying the stomach by any emetic, we can scarcely think necessary, as the stomach almost always throws off whatever it contains, and continues to do so for days, or even weeks, in chronic cases. The leeching and cupping over the stomach, we think, a good plan; and afterward a small blister, especially in chronic cases, on the abdomen. We

must, however, give the treatment according to our own views, and which we believe is now the practice of many physicians of the present time.

When an individual, living in a neighborhood where the milk sickness occasionally occurs, and when it is epidemic among the lower animals, is attacked with an affection having the characteristics of this malady in its acute form, we would advise that he should take ten grains of calomel, with a grain of opium, every hour, in the form of pills, until four doses be taken; and, in the mean time, if fever with headache is present, a moderate quantity of blood should be taken from the arm, while cups should be applied over the region of the stomach, either dry or with scarifications. During the three or four hours in which the above treatment is being carried out, no more is necessary than that the drinks should be regulated as to quality and quantity. Small pieces of ice or iced water should be given every fifteen or thirty minutes; or, what would be better, the effervescing draughts, particularly that composed of a table-spoonful of lemon-juice, with two table-spoonfuls of water combined with twenty grains of bicarbonate of potash. The lemon-juice, the water, and potash must be brought together, and drank while effervescing. This amount may be given every hour or two, and often with great advantage. Other forms of effervescing mixture can be found under the proper heads in this work, which would answer nearly as well. Now, after the patient has gone through four hours' of this kind of treatment, and is found to be better, it will then be proper to give an injection of warm water and common salt, castor-oil, or Epsom salts, every few hours, for the purpose of aiding the other prescriptions in bringing about purging. The purgative medicines to be preferred, after the opium and calomel, are the senna, manna, and salts, and the compound extract of colocynth. Two grains of this extract, with half a grain of calomel, should be given every four hours, until purgation is brought about. Severe or drastic purgatives are always borne badly where there is much irritation of the stomach or bowels, but any of the milder kinds could be used without danger; and of them all, calomel is the best, and should, in case of the continuance of the vomiting, be given every half hour—grain doses, combined with the fourth of a grain of opium, so long as the irritation continues, or until thirty or forty grains of the calomel have been taken, when we must rely on other means,

such as blistering over the stomach, a continuance of the injections, etc.

It should ever be recollected that salivation must be considered the main means of cure. Where the disease runs into the chronic form, those remedies must be relied on which will give strength without irritation, and conduce most to quiet the stomach. Morphine, in moderate quantities, will have to be resorted to at night; and, if possible, quinine, in small doses, should be given three or four times a day, in the form of a pill, powder, or solution. The quantity, probably, should not be more than one or two grains at a dose. Then the watery effusions of the Peruvian bark, when they can be borne, with the addition of sulphuric acid, would be found to be serviceable.

The chronic form of this disease comes on by vomiting, either less or more frequent, and with the affection confined very much to the stomach. We shall speak now of the little we saw long since.

In the two cases which we have before mentioned, we were not called immediately, for they both had existed several days before any prescription was made. The symptoms, however, were as urgent as at the first. Obstinate constipation existed, and the rejection by vomiting of every thing taken into the stomach. Under these circumstances, we administered small doses of calomel every half hour, combining with these a little compound extract of colocynth. One grain of the former, with half a grain of the latter, is the dose. This course was continued, in each case, for forty-eight hours. At the same time, a blister was applied over the stomach in each, and injections were occasionally directed. One case was relieved within three days by purging, and the other in about four days. The medicine was given in pills, made freshly, but as solid as possible. The use of the mercury was continued until the salivary glands were excited in each case. After this, tonics of the Peruvian bark were used, until complete recovery took place. The bowels, in the mean time, were properly regulated.

A case still more chronic than these fell under our care, not far from the same time. In this case, the surface was below the natural standard as to heat; the pulse was low, the voice feeble; there was constant burning in the stomach, and incessant vomiting after eating or drinking, until every thing was ejected. The patient only occasionally escaped this, when food and drink would be re-

tained a short time. It was not until the disease had lasted some eight or ten weeks that we saw this patient. He was then vomiting dark and grumus matter, which satisfied us that there was present chronic inflammation of the stomach. Very little was advised, as no medicine could benefit him. The emaciation was extreme, and the bowels still constipated.

The year before we saw these patients, we had seen two cases in one house, which had come on in the most violent manner, and both had become comatose in a short time, and died about the end of the third day. At the time we saw them, the skin answered to the yellowness of the yellow fever. Now, this condition of the skin, and other considerations, brought us to the conclusion that malignant bilious fever existed in both cases, as we have noticed.

We would then advise, in all chronic cases, small and repeated doses of calomel, with small quantities of opium—one grain of the former and a fourth of the latter, every half or every hour, until the vomiting should cease. We would leech and cup over the stomach once or twice, and whatever drink should be given, would be the effervescing draughts, as directed in the bilious fevers. These might be given once an hour, if borne well. During this time, we would direct an injection of salt and water every four hours, and after the calomel and opium had been given, until some forty grains of the former had been taken. We would then lay the opium aside, and combine some active cathartic with the calomel, in small doses, every two hours, until purging was brought about. After this, we would give quinine, in medium quantities, until the strength is measurably restored. Not a few things will occur in the treatment of this affection that will require variation from these medications, yet we would long persevere with the calomel before we would give the case up.

PHLEGMASIA DOLENS, OR MILK LEG.

This disease mostly occurs in women after delivery, though there are instances where it attacks women who have never borne children, and even men; but these instances are so few that the affection has received the name of milk leg, because it so generally begins after confinement, and that, too, within from four to fourteen days. It sometimes, however, does not appear until a later period. In most instances it is ushered in by fever and chill, but, preceding these

by one or more days, there is pain in the side of the abdomen and near the groin, with some soreness and distension. The pain soon fixes itself in the groin, and afterward extends down the thigh, and even to the calf of the leg. Within some hours after it has assumed these characteristics, the limb on the same side begins to swell, and, within a very short time, is twice the natural size. The labium on that side is involved in the swelling to a painful extent. There is great soreness, as well as pain of the limb. It is tense to the touch, and is smooth and shining, unless on the inner side of the thigh, and above the middle, where there is sometimes redness, mostly confined over the great vessels, which generally become hard, and can be felt like a cord. The disease may now be said to be completely formed, and generally goes on for about two weeks before there is much mitigation, when the pain and soreness begin to subside, being followed by a continuance of the swelling, with still some pain for weeks, the swelling often continuing through life, but in so tolerant a condition that the patient comes to bear it with comparative ease, but it is still a drawback on her general health.

The remote cause of phlegmasia dolens is mostly inflammation of the veins of the womb, which occurs after delivery, and which irritation or inflammation is eventually transferred to the great veins of the groin, that so act on the free circulation of the blood in the limb on the affected side that the whole train of symptoms constituting phlegmasia dolens is developed. Once in a long time, this inflammation of the veins causes so much morbid irritation that abscesses are formed, in the groin first, and then at other points, which eventually result in death. This grave form of the disease we have never seen, and it will very seldom be found when a proper course of treatment is pursued after delivery, by diet and medicine.

Toward the close of the disease, there is affusion of water in the limb, which is known by the sinking of the finger when pressed on the lower part of the limb. This oedema, this swelling, may extend to the other lower extremity, or even over the system, though in a much less degree.

Treatment.—It will be found, in almost every instance of this affection, that for several days before intense pain is established in the groin, there is fullness of the abdomen low down on the side, which is to be the seat of the disease. This, we think, is first

brought about by costiveness and improper diet, which condition of the bowels should be at once attended to. The patient ought to take from five to eight grains of calomel, with half a grain of opium, which should be followed by a free dose of castor-oil, Epsom salts, or some other purgative. An ounce of castor-oil, or of salts, may be taken, every few hours, until free purging takes place. If the purgative does not act within a few hours, injections of salt and water ought to be given, every two hours, until the medicine acts freely. Now, this course was first suggested to the writer by observing that the milk leg nearly always occurs by neglect in not keeping the bowels sufficiently open after delivery; for, when the patient is careful to keep the bowels in an open state, and is careful as to diet, and proper regulations as to cleanliness and ventilation, the affection seldom occurs. This first premonitory symptom has not been noticed by writers, yet we think they have not been careful enough in observation. We must now confine ourselves to the treatment after the location in the groin, where, no doubt, the disease is in its incipient condition when the first uneasiness is felt above.

When the milk leg has once got established in the groin, and there is tenderness, pain, and swelling, it becomes necessary to use the most energetic means for subduing inflammation. If the patient has a strong pulse, with a hot and dry skin, blood ought to be drawn from the arm to the point of fainting. A poultice, or cloths dipped in hot water, or hop water, should be applied to the affected part, and renewed every eight hours, for several days. These applications would be improved by the addition of a teaspoonful of laudanum for each poultice or fomentation. At the same time that this is being done, the patient should have her bowels moved once or twice a day, by Epsom salts, or some other mild purgative. Half a grain of calomel, with ten grains of jalap, will answer a good purpose. The dose may be repeated twice a day, should one not answer the purpose; and should the patient be feeble, only an occasional action of the bowels ought to be desired—that is, once every, or every other day, which may be effected by seidlitz powders, or a bottle of the fluid citrate of magnesia. But patients laboring under phlegmasia dolens do not often need general blood-letting, for where the pulse is quick and frequent, without much force, leeches should only be used; these, however, ought to be used freely. Twenty-four should be applied at once over the

sore and painful part, and reapplied every twenty-four hours, until the inflammation has lost its force. Sometimes twelve leeches may be enough, and in the strong three dozen may be used. Leeches must be used occasionally, not only at the groin, but on the inside of the thigh, if there be pain and hardness. There must now be attention paid to the condition of the general system; the fever must be controlled, and sleep must be brought about by anodynes, and, at the same time, the healthy action of the skin and kidneys must be effected, if possible. The first of these objects must be brought about by the combination of tartar emetic, calomel, and opium, in small and repeated doses—about half a grain of opium, with half a grain of calomel, and the eighth of a grain of tartar emetic, two or three times a day, will be enough. Should this amount of calomel make the mouth sore, it must be laid aside, and only a small blue pill given, twice a week. The kidneys can be excited to normal action by ten grains of niter, three times a day, or by two grains of the iodide of potash, in a table-spoonful of syrup, once in eight hours. Probably this last will do best to depend on. During the time that the general treatment is going on, the affected limb must be attended to with the greatest care; it should be kept in a horizontal position, or the heel a little raised, with the knee slightly bent. It should rest on some soft substance. Cotton wadding or batting answers a most excellent purpose. No embrocations or liniment should be used until the inflammation has mostly disappeared; before that, poultices and local vapor baths are the best. It is our opinion that cold applications will generally do harm, though Professor Wood recommends them. After the disease has lasted some weeks, it is usual for the whiteness and tension to give way, and the limb to assume a more healthy appearance. There will then be some dropsical effusion, which may be treated with the camphorated oil; or, if there be soreness about the groin or lower down, a narrow and long blister, half the length of the thigh, should be applied on the inside, which sometimes does much good. Again: it will be proper, when there is much debility, to apply a muslin or flannel roller on the limb; the pressure by it should be very gentle and even. Reapplication every day should be made.

If the above course be persevered in until the irritation be subdued, and then gentle exercise with mild tonics be used, the patient will often get up without lameness or swelling. Probably a grain,

or a grain and a half of quinine, taken three times a day, will answer better than any other tonic; or small doses of iron will often be useful. Five grains of the carbonate of iron, taken in syrup, will answer as well as any preparation. It is sometimes right to let the patient take a little wine or brandy after each meal. It should never be forgotten that after the force of the disease has been expended, opiates should be discontinued; for, however useful they are to produce sleep during the acute stage of the malady, they become hurtful during the convalescence.

ULCERS ABOUT THE NAILS.

These are very common and extremely troublesome, occurring usually by the side of the great toe. They are popularly termed "growth of the nail into the flesh." They do not, however, arise from any alteration in the nail, as the name would imply, but the adjoining soft parts are first swelled and inflamed by constant pressure against the edge, from the use of tight shoes. If this state be permitted to increase, suppuration follows, and then an ulcer of extreme sensitiveness is formed. In this the nail becomes imbedded, often producing great pain, so much so as to prevent the sufferer from walking at all.

Treatment.—We must remove the irritation produced by the nail, and reduce the swelling of the soft parts. In most cases, if the nail, having been well softened by soaking in warm water, is shaved as thin as possible with a bit of glass, the pain and irritation may be allayed by rest for a day or two, with fomentations and poultices; and then any ulcer that has formed will soon heal with the aid of the following:

Black Wash.

No. 242. Calomel.....	1 drachm.
Lime water.....	4 ounces.
Mix well.	

This wash to be applied on lint, or we may touch the ulcer with lunar caustic. More obstinate cases will require the service of a surgeon.

FELON, OR WHITLOW.

This is a very common and painful abscess of the fingers. There are four kinds. The first, called cutaneous, is an inflammation of

the surface of the skin on the end of the finger, accompanied with burning pain, and an effusion of watery or bloody fluid, raising the skin in the form of a bladder. The second, termed subcutaneous, is attended with greater pain and throbbing, and formation of matter *under* the skin at the root of the nail, which may come off. The third, called the tendinous, is an affection of the tendinous sheath, or covering immediately next the bone, and called the periosteum. This form of felon is the one which usually attracts most attention, being, in addition to its extreme painfulness, a very lingering complaint. The tendinous sheath of the bone is very tough, and will resist suppuration for a long time. The fourth kind, called carbuncular, is rarely met with. It partakes of the nature of a carbuncle, and is treated similarly.

Treatment—of the first and second kinds of felon is purgatives, followed by tonics, with fomentations and poultices to the affected parts. But if these measures do not easily cause the resolution of the matter, a pretty free incision should be made into the inflamed part. If the tip of the finger is painful and tender for a long time, without suppuration, let it be penciled with lunar caustic.

In treating the tendinous felon, if purgatives and fomentations do not speedily relieve, the finger should be laid open by a surgeon.

TRICHINA SPIRALIS.

Man has ever dreaded the “worms” which fatten on the human corpse after death. Totally ignorant are mankind, in general, of the insidious “worms” and “parasites” that find their way into the living body. There are a variety of species of these worms, or parasites, infesting the entire body, leaving scarcely any portion untouched. We will not here stop to give a full treatise on all these various kinds, but will proceed directly to a consideration of the *TRICHINA SPIRALIS*.

This has proven a more deadly foe to man than all other parasites combined.

It is discernable only by means of the microscope, and is, in this respect, in striking contrast with the tapeworm, which is to be found of many feet in length.

This worm was discovered in the year 1832, and in 1835, Professor Owen published a scientific description of it. The name, “*Trichina Spiralis*,” is derived from the strong resemblance which

the parasite bears to a fine hair, coiled up like a watch-spring. Six victims of trichina were reported in London in 1835, creating somewhat of a stir in the medical profession, since which time several cases have been carefully studied, and some light thrown upon the subject. We have said that the aid of the magnifying glass is necessary in these studies, but when the parasite is inclosed in its chalky capsule, or shell, it can frequently be observed with the naked eye, appearing as a small white point, when a section of muscle is examined.

We are largely indebted to several eminent German physicians for our information concerning trichina spiralis, they having devoted much time to the examination into the nature, structure, and habits of this singular pest.

Many experiments with animals have been made, all going to show the destructive power of these worms. By introducing the worm into the stomach of the dog, cat, rabbit, fowl, etc., the experimenter was enabled to witness all the various phenomena of trichina disease. Seven dogs out of nine thus treated died, and an examination of their muscles, after death, disclosed the presence of innumerable free trichinæ.

The parasite gets into the human stomach while yet in its shell. This shell is very soon dissolved by the juices of the stomach, setting free the trichinæ, which immediately grow very fast, and are ready to bring forth their young in a few days, each female bringing forth about one hundred live young. This new swarm of trichinæ begins immediately to burrow through the stomach and bowels, their destination being the *muscular* system of the body, avoiding, with singular instinct, the parts usually denominated "vital," as the brain, heart, lungs, and liver. The immediate effect of this burrowing of the worms in the stomach and bowels, is to produce symptoms of diarrhea and dysentery, accompanied with bloody discharges from the bowels. The inflammation produced is frequently followed by ulceration of the bowels, when death rapidly ensues.

We can not impart a more accurate idea of the terrible ravages of trichinæ than by presenting the following account, taken from a British medical journal :

"The village of Hettstadt is situated near the Hartz Mountains, in Germany. An annual festival was celebrated there some two years since, and one hundred and three persons sat down to din-

ner, the third course consisting of *rostewurst* and *gemuse* (sausage and vegetables). The sausage had been prepared beforehand for this special occasion. The steward who had been commissioned to furnish the pig for this purpose, gave the butcher a lean, ill-conditioned one, instead of the thrifty one which had been bargained for. The day after the festival, several persons who had participated in the dinner were attacked with pain and irritation of the intestines, with loss of appetite, fever, and great prostration. The number increased from day to day, and an epidemic of typhus or septic fever was apprehended, as the symptoms began to assume that character. However, as the disease progressed, the symptoms assumed a different type, and to diarrhea, dysentery, and fever were added peritonitis, circumscribed pneumonia, and paralysis of the abdominal and intercostal muscles with those of the neck. Then the typhus theory was abandoned, and some unknown poison was assumed to be at the bottom of it. Under this conviction, every article of food, and material used in connection with the dinner, was rigidly examined. By this time, the trichinæ had reached the muscles of the calf of the leg in some of the victims, and Zenker's description of the disease was called to mind. The remnants of the sausage were examined, and found to be literally swarming with trichinæ. Portions of muscle from the calf of the leg of the affected ones were examined under the microscope, and were found full of free trichinæ. These were the progeny of the *encapsuled* ones, which had escaped the smoking and frying process to which the sausage had been subjected. No less than eighty-three of the above-mentioned number died within a few weeks, and the surviving twenty, at last accounts, were still lingering in agony, and apprehensive of a similar fate. This awful catastrophe at Hettstadt awakened sympathy and fear throughout all Germany, and many eminent medical men were consulted in the interest of the sufferers, but none could bring relief or cure. With an obstinacy unsurpassed by any other disease, *trichianis* surely carried its victims to the grave. Many *vermifuges* were employed with the hope of removing the parasites still in the alimentary canal. Picric acid was employed, until its effects seemed as dangerous as the disease itself. An examination of the bodies after death, showed the trichinæ to have been unaffected by any of the remedies employed.

"Professor Mossler, of Germany, has recently made public the

most successful treatment of this disease. The following is the formula:

No. 243. Benzine	1 scruple.
Sol. liquorice Muc. Ac. aa	1 oz.
Aqua Menth.....	4 oz.
Mix.	

Of which compound, give a table-spoonful every hour or two."

In our country, there have been some cases of trichina disease. In New York City, early in 1864, a whole family was poisoned by eating trichinous pork. The father died; the rest recovered. A man and his wife living in Chicktonago, New York, were fatally poisoned by eating diseased pork; and from various parts of the country, reports are constantly coming in of new and frequently fatal cases of trichina poisoning. The means of detecting the presence of these parasites is by the aid of the microscope, which is quite out of the question with the public at large. That portion of our community denominated Israelites will undoubtedly escape the disease altogether.

CHAPTER IX.

HOW TO NURSE THE SICK.

It has been said that every woman makes a good nurse. I believe, on the contrary, that the very elements of nursing are all but unknown.

By this I do not mean that the nurse is always to blame. Bad sanitary, bad architectural, and bad administrative arrangements often make it impossible to nurse. But the art of nursing ought to include such arrangements as alone make what I understand by nursing possible.

The art of nursing, as now practiced, seems to be expressly constituted to unmake what God had made disease to be, viz., a reparative process.

In many diseases, the exact value of particular remedies and modes of treatment is by no means ascertained, while there is universal experience as to the extreme importance of careful nursing in determining the issue of the disease.

The very elements of what constitutes good nursing are as little understood for the well as for the sick. The same laws of health or of nursing, for they are in reality the same, obtain among the well as among the sick. The breaking of them produces only a less violent consequence among the former than among the latter—and this sometimes, not always.

It is constantly objected, "But how can I obtain this medical knowledge? I am not a doctor. I must leave this to doctors."

Oh, mothers of families! You who say this do you know that one in every seven infants perishes before it is one year old? Is all this premature suffering and death necessary? Or did Nature intend mothers to be always accompanied by doctors? Or is it better to learn the piano-forte than to learn the laws which subserve the preservation of offspring?

The very first rule of nursing, the first and the last thing upon

which a nurse's attention must be fixed, the first essential to a patient, without which all the rest you can do for him is as nothing, with which, I had almost said, you may leave all the rest alone, is this: TO KEEP THE AIR HE BREATHEs AS PURE AS THE EXTERNAL AIR, WITHOUT CHILLING HIM. Yet what is so little attended to? Even where it is thought of at all, the most extraordinary misconceptions reign about it. Even in admitting air into the patient's room or ward, few people ever think where that air comes from. It may come from a corridor into which other wards are ventilated; from a hall, always unaired, always full of the fumes of gas, dinner, of various kinds of mustiness; from an underground kitchen, sink, wash-house, water-closet, or even, as I myself have had sorrowful experience, from open sewers loaded with filth; and with this the patient's room or ward is aired, as it is called—poisoned, it should rather be said. Always air from the air without, and that, too, through those windows through which the air comes freshest. From a closed court, especially if the wind do not blow that way, air may come as stagnant as any from a hall or corridor.

Again, a thing I have often seen both in private houses and institutions. A room remains uninhabited; the fire-place is carefully fastened up with a board, the windows are never opened; probably the shutters are kept always shut; perhaps some kind of stores are kept in the room; no breath of fresh air can by possibility enter into that room, nor any ray of sun. The air is as stagnant, musty, and corrupt as it can by possibility be made. It is quite ripe to breed small-pox, scarlet fever, diphtheria, or any thing else you please.

Yet the nursery, ward, or sick room adjoining will positively be aired (?) by having the door opened into that room. Or children will be put into that room, without previous preparation, to sleep.

With a proper supply of windows, and a proper supply of fuel in open fire-places, fresh air is comparatively easy to secure when your patient or patients are in bed. Never be afraid of open windows then. People don't catch cold in bed. With proper bed-clothes and hot bottles, if necessary, you can always keep a patient warm in bed, and well ventilate him at the same time.

But a careless nurse will stop up every cranny, and keep a hot-house heat when her patient is in bed; and, if he is able to get up, leave him comparatively unprotected. The time when people take cold (and there are many ways of taking cold besides a cold in the

nose), is when they first get up after the twofold exhaustion of dressing and of having had the skin relaxed by many hours, perhaps days, in bed, and thereby rendered more incapable of reaction. Then the same temperature which refreshes the patient in bed, may destroy the patient just risen. And common sense will point out that, while purity of air is essential, a temperature must be secured which shall not chill the patient. Otherwise, the best that can be expected will be a feverish reaction.

To have the air within as pure as the air without, it is not necessary, as often appears to be thought, to make it as cold.

In the afternoon, again, without care, the patient, whose vital powers have then risen, often finds the room as close and oppressive as he found it cold in the morning. Yet the nurse will be terrified if a window is opened.

In a little book on nursing, published a short time ago, we are told that, "with proper care it is very seldom that the windows can not be opened for a few minutes twice a day, to admit fresh air from without." I should think not; nor twice in an hour either. It only shows how little the subject has been considered.

Of all methods of keeping patients warm, the very worst certainly is to depend for heat on the breath and bodies of the sick. I have known a medical officer keep his ward windows hermetically closed. Thus exposing the sick to all the dangers of an infected atmosphere, because he was afraid that, by admitting fresh air, the temperature of the ward would be too much lowered. This is a destructive fallacy.

To attempt to keep a ward warm at the expense of making the sick repeatedly breathe their own hot, humid, putrescing atmosphere is a certain way to delay recovery, or to destroy life.

Do you ever go into the bed-rooms of any persons of any class, whether they contain one, two, or twenty people, whether they hold sick or well, at night, or before the windows are opened in the morning, and ever find the air any thing but unwholesomely close and foul? And why should it be so? And of how much importance it is that it should not be so? During sleep, the human body, even when in health, is far more injured by the influence of foul air than when awake. Why can't you keep the air all night, then, as pure as the air without, in the rooms you sleep in? But for this, you must have sufficient outlet for the impure air you make yourselves to go out; sufficient inlet for the pure

air from without to come in. You must have open chimneys, open windows, or ventilators; no close curtains round your beds; no shutters or curtains to your windows, none of the contrivances by which you undermine your own health, or destroy the chances of recovery of your sick.

A careful nurse will keep a constant watch over her sick, especially weak, protracted, and collapsed cases, to guard against the effects of the loss of vital heat by the patient himself. In certain diseased states much less heat is produced than in health; and there is a constant tendency to the decline and ultimate extinction of the vital powers by the call made upon them to sustain the heat of the body. Cases where this occurs should be watched with the greatest care from hour to hour, I had almost said from minute to minute. The feet and legs should be examined by the hand, from time to time, and whenever a tendency to chilling is discovered, hot bottles, hot bricks, or warm flannels, with some warm drink, should be made use of until the temperature is restored. The fire should be, if necessary, replenished. Patients are frequently lost in the latter stages of disease from want of attention to such simple precautions. The nurse may be trusting to the patient's diet, or to his medicine, or to the occasional dose of stimulant which she is directed to give him, while the patient is all the while sinking from want of a little external warmth. Such cases happen at all times, even during the height of summer. This fatal chill is most apt to occur toward early morning at the period of the lowest temperature of the twenty-four hours, and at the time when the effect of the preceding day's diets is exhausted.

Generally speaking, you may expect that weak patients will suffer cold much more in the morning than in the evening. The vital powers are much lower. If they are feverish at night, with burning hands and feet, they are almost sure to be chilly and shivering in the morning. But nurses are very fond of heating the foot-warmer at night, and of neglecting it in the morning, when they are busy. I should reverse the matter.

All these things require common sense and care. Yet, perhaps, in no one single thing is there so little common sense shown, in all ranks, as in nursing.

The extraordinary confusion between cold and ventilation, even in the minds of well-educated people, illustrates this. To make

a room cold is by no means necessarily to ventilate it. Nor is it at all necessary, in order to ventilate a room, to chill it. Yet, if a nurse finds a room close, she will let out the fire, thereby making it closer, or she will open the door into a cold room, without a fire, or an open window in it, by way of improving the ventilation. The safest atmosphere of all for a patient is a good fire and an open window, excepting in extremes of temperature. To ventilate a small room without draughts, of course requires more care than to ventilate a large one.

Always air your room from the outside air, if possible. Windows are made to open; doors are made to shut—a truth which seems extremely difficult of apprehension.

If we are to preserve the air within as pure as the air without, it is needless to say that the chimney must not smoke. Almost all smoky chimneys can be cured—from the bottom, not from the top. Often it is only necessary to have an inlet for air to supply the fire, which is feeding itself, for want of this, from its own chimney. On the other hand, almost all chimneys can be made to smoke by a careless nurse, who lets the fire get low, and then overwhelms it with coal; not, as we verily believe, in order to spare herself trouble (for very rare is unkindness to the sick), but from not thinking what she is about.

In laying down the principle that the first object of the nurse must be to keep the air breathed by her patient as pure as the air without, it must not be forgotten that every thing in the room which can give off effluvia, besides the patient, evaporates itself into his air. And it follows that there ought to be nothing in the room, excepting him, which can give off effluvia or moisture. Out of all damp towels, etc., which become dry in the room, the damp, of course, goes into the patient's air.

Even in health people can not repeatedly breathe air in which they live with impunity, on account of its becoming charged with unwholesome matter from the lungs and skin. In disease where every thing given off from the body is highly noxious and dangerous, not only must there be plenty of ventilation to carry off the effluvia, but every thing which the patient passes must be instantly removed, as being more noxious than even the emanations from the sick.

Of the fatal effects of the effluvia from the excreta, it would seem unnecessary to speak, were they not so constantly neglected.

Concealing the utensils behind the vallance to the bed seems all the precaution which is thought necessary for safety in private nursing. Did you but think for one moment of the atmosphere under that bed, the saturation of the under side of the mattress with the warm evaporations, you would be startled, and frightened too !

The use of any chamber utensil *without a lid* should be utterly abolished, whether among sick or well. You can easily convince yourself of the necessity of this absolute rule, by taking one with a lid, and examining the under side of that lid. It will be found always covered, whenever the utensil is not empty, by condensed offensive moisture. Where does that go, when there is no lid ?

Earthenware, or if there is any wood, highly polished and varnished wood, are the only materials fit for patients' utensils. The very lid of the old abominable close-stool is enough to breed a pestilence. It becomes saturated with offensive matter, which scouring is only wanted to bring out. I prefer an earthenware lid as being always cleaner. But there are various good new-fashioned arrangements.

A slop-pail should never be brought into a sick room. It should be a rule invariable, rather more important in the private house than elsewhere, that the utensil should be carried directly to the water-closet, emptied there, rinsed there, and brought back. There should always be water and a faucet in every water-closet for rinsing. But even if there is not, you must carry water there to rinse with. In the best hospitals it is now a rule that no slop-pail shall ever be brought into the wards, but that the utensils shall be carried direct to be emptied and rinsed at the proper place. I would it were so in the private house.

Let no one ever depend upon fumigations, "disinfectants," and the like, for purifying the air. The offensive thing, not its smell, must be removed. A celebrated medical lecturer began, one day, "Fumigations, gentlemen, are of essential importance. They make such an abominable smell that they compel you to open the window." I wish all the disinfecting fluids invented made such an "abominable smell" that they forced you to admit fresh air. That would be a useful invention.

There are five essential points in securing the health of houses :

1. Pure air.
2. Pure water.

3. Efficient drainage.

4. Cleanliness.

5. Light.

Without these, no house can be healthy. And it will be unhealthy just in proportion as they are deficient.

1. To have pure air, your house should be so constructed as that the outer atmosphere shall find its way with ease to every corner of it. House architects hardly ever consider this. The object in building a house is to obtain the largest interest for the money, not to save doctors' bills to the tenants. But, if tenants should ever become so wise as to refuse to occupy unhealthy constructed houses, and if insurance companies should ever come to understand their interest so thoroughly as to pay a Sanitary Surveyor to look after the houses where their clients live, speculative architects would speedily be brought to their senses. As it is, they build what pays best. And there are always people foolish enough to take the houses they build. And if in the course of time the families die off, as is so often the case, nobody ever thinks of blaming any but Providence for the result. Badly constructed houses do for the healthy what badly constructed hospitals do for the sick. Once insure that the air in a house is stagnant, and sickness is certain to follow.

2. Pure water is more generally introduced into houses than it used to be.

3. Many people have no idea in what good drainage consists. They think that a sewer in the street, and a pipe leading to it from the house, is good drainage. All the while the sewer may be nothing but a laboratory from which epidemic disease and ill health is being distilled into the house. No house with any untrapped drain-pipe communicating immediately with a sewer, whether it be from water-closet, sink, or gully-gate, can ever be healthy. An untrapped sink may at any time spread fever or pyæmia among the inmates of a palace.

Another great evil in house construction is carrying drains underneath the house. Such drains are never safe. All house drains should begin and end outside the walls. Many people will readily admit, as a theory, the importance of these things; but how few are there who can intelligently trace disease in their households to such causes! Is it not a fact, that when scarlet fever, measles, or small-pox appear among the children, the very first thought which

occurs is, "where" the children can have "caught" the disease? And the parents immediately run over in their minds all the families with whom they may have been. They never think of looking at home for the source of the mischief. If a neighbor's child is seized with small-pox, the first question which occurs is, whether it had been vaccinated. No one would undervalue vaccination; but it becomes of doubtful benefit to society when it leads people to look abroad for the source of evils which exist at home.

4. Without cleanliness, within and without your house, ventilation is comparatively useless. Rich people like to have their stables and dung-hill near their houses. But does it ever occur to them that with many arrangements of this kind it would be safer to keep the windows shut than open? You can not have the air of the house pure with dung-heaps under the windows. And yet people are surprised that their children, brought up in large "well-aired" nurseries and bed-rooms, suffer from children's epidemics. If they studied Nature's laws in the matter of children's health, they would not be so surprised.

There are other ways of having filth inside a house besides having dirt in heaps. Old papered walls of years' standing, dirty carpets, uncleansed furniture, are just as ready sources of impurity to the air as if there were a dung-heap in the basement. People are so unaccustomed, from education and habits, to consider how to make a home healthy, that they either never think of it at all, and take every disease as a matter of course, to be "resigned to" when it comes "as from the hand of Providence;" or, if they ever entertain the idea of preserving the health of their household as a duty, they are very apt to commit all kinds of "negligences and ignorances" in performing it.

5. A dark house is always an unhealthy house, always an ill-aired house, always a dirty house. Want of light stops growth, and promotes scrofula, rickets, etc., among the children.

People lose their health in a dark house, and if they get ill, they can not get well again in it.

Three out of many "negligences and ignorances" in managing the health of houses generally, I will here mention as specimens: 1. That the female head in charge of any building does not think it necessary to visit every hole and corner of it every day. How can she expect those who are under her to be more careful to maintain her house in a healthy condition than she who is in

charge of it? 2. That it is not considered essential to air, to sun, and to clean rooms while uninhabited; which is simply ignoring the first elementary notion of sanitary things, and laying the ground ready for all kinds of diseases. 3. That the window, and one window, is considered enough to air a room. Have you never observed that any room without a fire-place is always close? And, if you have a fire-place, would you cram it up not only with a chimney-board, but perhaps with a great wisp of brown paper, in the throat of the chimney—to prevent the soot from coming down, you say? If your chimney is foul, sweep it; but don't expect that you can ever air a room with only one aperture; don't suppose that to shut up a room is the way to keep it clean. It is the best way to foul the room and all that is in it. Don't imagine that if you, who are in charge, don't look to all these things yourself, those under you will be more careful than you are. It appears as if the part of a mistress now is to complain of her servants, and to accept their excuses—not to show them how there need be neither complaints made nor excuses.

The houses of the grandmothers and great-grandmothers of this generation, at least the country-houses, with front door and back door always standing open, winter and summer, and a thorough draft always blowing through—with all the scrubbing, and cleaning, and polishing, and scouring which used to go on, the grandmothers, and still more the great-grandmothers, always out of doors, and never with a bonnet on except to go to church, these things entirely account for the fact so often seen of a great-grandmother, who was a tower of physical vigor, descending into a grandmother perhaps a little less vigorous, but still sound as a bell and healthy to the core, into a mother languid and confined to her carriage and house, and lastly into a daughter sickly and confined to her bed.

With regard to the health of houses where there is a sick person, it often happens that the sick-room is made a ventilating shaft for the rest of the house; for, while the house is kept as close, unaired, and dirty as usual, the window of the sick-room is kept a little open always, and the door occasionally. Now, there are certain sacrifices which a house with one sick person in it does make to that sick person: it ties up its knocker; it lays straw before it in the street. Why can't it keep itself thoroughly clean and unusually well aired, in deference to the sick person?

We must not forget what, in ordinary language, is called "Infection"—a thing of which people are generally so afraid that they frequently follow the very practice in regard to it which they ought to avoid. Nothing used to be considered so infectious or contagious as small-pox; and people not very long ago used to cover up patients with heavy bedclothes, while they kept up large fires and shut the windows. Small-pox, of course, under this *regime*, is very "infectious." People are somewhat wiser now in their management of this disease. They have ventured to cover the patients lightly, and to keep the windows open; and we hear much less of the "infection" of small-pox than we used to do. But do people in our days act with more wisdom on the subject of "infection" in fevers—scarlet fever, measles, etc.—than their forefathers did with small-pox? Does not the popular idea of "infection" involve that people should take greater care of themselves than of the patient? that, for instance, it is safer not to be too much with the patient, not to attend too much to his wants?

True nursing ignores infection, except to prevent it. Cleanliness and fresh air from open windows, with unremitting attention to the patient, are the only defense a true nurse either asks or needs.

Wise and humane management of the patient is the best safeguard against infection.

Unnecessary noise, or noise that creates an expectation in the mind, is that which hurts a patient. It is rarely the loudness of the noise, the effect upon the organ of the ear itself, which appears to affect the sick; but the talking, or the whispering, especially if it be of a familiar voice, outside his door.

There are certain patients, no doubt, especially where there is slight concussion or other disturbance of the brain, who are affected by mere noise; but intermittent noise, or sudden and sharp noise, in these, as in all other cases, affect far more than continuous noise—noise with jar far more than noise without. Of one thing you may be certain, that any thing which wakes a patient suddenly out of his sleep will invariably put him into a state of greater excitement, do him more serious, aye, and lasting mischief, than any continuous noise, however loud.

Never allow a patient to be waked, intentionally or accidentally. If he is roused out of his first sleep, he is almost certain to have no more sleep. It is a curious but quite intelligible fact, that

if a patient is waked after a few hours' instead of a few minutes' sleep, he is much more likely to sleep again; because pain, like irritability of brain, perpetuates and intensifies itself. If you have gained a respite of either in sleep, you have gained more than the mere respite. Both the probability of recurrence and of the same intensity will be diminished; whereas both will be terribly increased by want of sleep. This is the reason why sleep is so all-important. This is the reason why a patient waked in the early part of his sleep loses not only his sleep, but his power to sleep. A healthy person who allows himself to sleep during the day will lose his sleep at night. But it is exactly the reverse with the sick generally; the more they sleep, the better will they be able to sleep.

I have often been surprised at the thoughtlessness of friends who will hold a long conversation just in the room or passage adjoining to the room of the patient, who is either every moment expecting them to come in, or who has just seen them, and knows they are talking about him. If he is an amiable patient, he will try to occupy his attention elsewhere, and not to listen; and this makes matters worse, for the strain upon his attention and the effort he makes are so great that it is well if he is not worse for hours after. If it is a whispered conversation, in the same room, then it is absolutely cruel; for it is impossible that the patient's attention should not be involuntarily strained to hear. Walking on tiptoe, doing any thing in the room very slowly, are injurious, for exactly the same reasons. A firm, light, quick step, a steady, quick hand, are desirable; not the slow, lingering, shuffling foot, the timid, uncertain touch.

Unnecessary (although slight) noise injures a sick person much more than necessary noise (of a much greater amount).

The fidget of silk and of crinoline, the rattling of keys, the creaking of stays and of shoes, will do a patient more harm than all the medicines in the world will do him good.

Again, one nurse can not open the door without making every thing rattle; or she opens the door unnecessarily often, for want of remembering all the articles that might be brought in at once.

A good nurse will always make sure that no door or window in her patient's room shall rattle or creak; that no blind or curtain shall, by any change of wind through the open window, be made

to flap; especially will she be careful of all this before she leaves her patients for the night.

Always sit within the patient's view, so that when you speak to him he has not painfully to turn his head round in order to look at you. Everybody involuntarily looks at the person speaking. If you make this act a wearisome one on the part of the patient you are doing him harm. So, also, if by continuing to stand you make him continuously raise his eyes to see you. Be as motionless as possible, and never gesticulate in speaking to the sick.

If the invalid is forced, by his avocations, to continue occupations requiring much thinking, the injury is doubly great. In feeding a patient suffering under delirium or stupor, you may suffocate him, by giving him his food suddenly, but if you rub his lips gently with a spoon, and thus attract his attention, he will swallow the food unconsciously, but with perfect safety. Thus it is with the brain. If you offer it a thought, especially one requiring a decision abruptly, you do it a real not fanciful injury. Never speak to a sick person suddenly; but, at the same time, do not keep his expectation on the tiptoe.

Do not meet or overtake a patient who is moving about in order to speak to him, or to give him any message or letter. You might just as well give him a box on the ear. I have seen a patient fall flat on the ground who was standing when his nurse came into the room. This was an accident which might have happened to the most careful nurse. But the other is done with intention. A patient in such a state is not going to the East Indies. If you would wait ten seconds, or walk ten yards further, any promenade he could make would be over. You do not know the effort it is to a patient to remain standing for even a quarter of a minute to listen to you. If I had not seen the thing done by the kindest nurses and friends, I should have thought this caution quite superfluous.

Patients are often accused of being able to "do much more when nobody is by." It is quite true that they can. Unless nurses can be brought to attend to considerations of the kind of which we have given here but few specimens, a very weak patient finds it really much less exertion to do things for himself than to ask for them. And he will, in order to do them, (very innocently and from instinct) calculate the time his nurse is likely to be absent, from a fear of her "coming in upon" him or speaking to

him, just at the moment when he finds it quite as much as he can do to crawl from his bed to his chair, or from one room to another, or down stairs, or out of doors for a few minutes. Some extra call made upon his attention at that moment will quite upset him. In these cases you may be sure that a patient in the state we have described does not make such exertions more than once or twice a day, and probably much about the same hour every day. And it is hard, indeed, if nurse and friends can not calculate so as to let him make them undisturbed. Remember, that many patients can walk who can not stand or even sit up. Standing is, of all positions, the most trying to a weak patient.

Every thing you do in a patient's room, after he is "put up" for the night, increases tenfold the risk of his having a bad night. But, if you rouse him up after he has fallen asleep, you do not risk, you secure him a bad night.

One hint I would give to all who attend or visit the sick, to all who have to pronounce an opinion upon sickness or its progress. Come back and look at your patient *after* he has had an hour's animated conversation with you. It is the best test of his real state we know. But never pronounce upon him from merely seeing what he does, or how he looks, during such a conversation. Learn also carefully and exactly, if you can, how he passed the night after it.

People rarely, if ever, faint while making an exertion. It is after it is over. Indeed, almost every effect of over-exertion appears after, not during such exertion. It is the highest folly to judge of the sick, as is so often done, when you see them merely during a period of excitement. People have very often died of that which, it has been proclaimed at the time, has "done them no harm."

Remember never to lean against, sit upon, or unnecessarily shake, or even touch the bed in which a patient lies. This is invariably a painful annoyance. If you shake the chair on which he sits, he has a point by which to steady himself, in his feet; but on a bed or sofa, he is entirely at your mercy, and he feels every jar you give him all through him.

With regard to reading aloud in the sick room, my experience is, that when the sick are too ill to read to themselves, they can seldom bear to be read to. Children, eye-patients, and uneducated persons are exceptions, or where there is any mechanical difficulty

in reading. People who like to be read to, have generally not much the matter with them; while in fevers, or where there is much irritability of brain, the effort of listening to reading aloud has often brought on delirium.

One thing more: From the flimsy manner in which most modern houses are built, where every step on the stairs, and along the floors, is felt all over the house, the higher the story, the greater the vibration. It is inconceivable how much the sick suffer by having any body overhead. In the solidly-built old houses, which, fortunately, most hospitals are, the noise and shaking is comparatively trifling; but it is a serious cause of suffering, in lightly-built houses, and with the irritability peculiar to some diseases. Better far put such patients at the top of the house, even with the additional fatigue of stairs, if you can not secure the room above them being untenanted; you may otherwise bring on a state of restlessness which no opium will subdue. Do not neglect the warning, when a patient tells you that he "feels every step above him to cross his heart." Remember that every noise a patient can not *see* partakes of the character of suddenness to him; and I am persuaded that patients with these peculiarly irritable nerves are positively less injured by having persons in the same room with them than overhead, or separated only by a thin compartment. Any sacrifice to secure silence for these cases is worth while, because no air, however good, no attendance, however careful, will do any thing for such cases without quiet.

To any but an old nurse, or an old patient, the degree would be quite inconceivable to which the nerves of the sick suffer from seeing the same walls, the same ceiling, the same surroundings, during a long confinement to one or two rooms.

The superior cheerfulness of persons suffering severe paroxysms of pain, over that of persons suffering from nervous debility, has often been remarked upon, and attributed to the enjoyment of the former of their intervals of respite. I incline to think that the majority of cheerful cases is to be found among those patients who are not confined to one room, whatever their suffering, and that the majority of depressed cases will be seen among those subjected to a long monotony of objects about them.

The effect in sickness of beautiful objects, of variety of objects, and especially of brilliancy of color, is hardly at all appreciated.

People say the effect is only on the mind. It is no such thing.

The effect is on the body too. Little as we know about the way in which we are affected by form, by color, and light, we do know this, that they have an actual physical effect.

Variety of form and brilliancy of color in the objects presented to patients are actual means of recovery.

But it must be *slow* variety: if you show a patient ten or twelve engravings successively, ten to one that he does not become cold and faint, or feverish, or even sick; but hang one up opposite him, one on each successive day, or week, or month, and he will revel in the variety.

Volumes are now written and spoken upon the effect of the mind upon the body. Much of it is true. But I wish a little more was thought of the effect of the body on the mind.

A patient can just as much move his leg when it is fractured as change his thoughts when no external help from variety is given him. This is, indeed, one of the main sufferings of sickness, just as the fixed posture is one of the main sufferings of the broken limb.

Every careful observer of the sick will agree in this, that thousands of patients are annually starved, in the midst of plenty, from want of attention to the ways which alone make it possible for them to take food. This want of attention is as remarkable in those who urge upon the sick to do what is quite impossible to them, as in the sick themselves who will not make the effort to do what is perfectly possible to them.

For instance, to the large majority of very weak patients it is quite impossible to take any solid food before 11 A. M.; nor then, if their strength is still further exhausted by fasting till that hour. For weak patients have generally feverish nights, and, in the morning, dry mouths; and, if they could eat with those dry mouths, it would be the worse for them. A spoonful of beef-tea, of arrowroot and wine, of egg flip, every hour, will give them the requisite nourishment, and prevent them from being too much exhausted to take at a later hour the solid food which is necessary for their recovery. And every patient who can swallow at all can swallow these liquid things, if he chooses.

Again, a nurse is ordered to give a patient a tea-cupful of some article of food every three hours. The patient's stomach rejects it. If so, try a table-spoonful every hour; if this will not do, a tea-spoonful every quarter of an hour.

I am bound to say, that I think more patients are lost by want of care and ingenuity in these momentous minutiae in private nursing than in public hospitals.

In very weak patients there is often a nervous difficulty of swallowing, which is so much increased by any other call upon their strength, that unless they have their food punctually at the minute, which minute again must be arranged so as to fall in with no other minute's occupation, they can take nothing until the next respite occurs, so that an unpunctuality or delay of ten minutes may very well turn out to be one of two or three hours. And why is it not as easy to be punctual to a minute? Life often literally hangs upon these minutes.

In acute cases, where life or death is to be determined in a few hours, these matters are very generally attended to, especially in hospitals; and the number of cases is large where the patient is, as it were, brought back to life by exceeding care on the part of the doctor or nurse, or both, in ordering and giving nourishment with minute selection and punctuality.

But in chronic cases, lasting over months and years, where the fatal issue is often determined at last by mere protracted starvation, I had rather not enumerate the instances which I have known where a little ingenuity, and a great deal of perseverance, might, in all probability, have averted the result. The consulting the hours when a patient can take food, the observation of the times, often varying, when he is most faint, the altering seasons of taking food, in order to anticipate and prevent such times—all this, which requires observation, ingenuity, and perseverance (and these really constitute the good nurse), might save more lives than we wot of.

To leave the patient's untasted food by his side, from meal to meal, in hopes that he will eat it in the interval, is simply to prevent him from taking any food at all. I have known patients literally incapacitated from taking one article of food after another, by this piece of ignorance. Let the food come at the right time, and be taken away, eaten or uneaten, at the right time; but never let a patient have "something always standing" by him, if you don't wish to disgust him of every thing.

A patient should, if possible, not see or smell either the food of others, or a greater amount of food than he himself can consume at one time, or even hear food talked about, or see it in the

raw state. I know of no exception to the above rule. The breaking of it always induces a greater or less incapacity of taking food.

That the more alone an invalid can be when taking food, the better, is unquestionable; and, even if he must be fed, the nurse should not allow him to talk, or talk to him, especially about food, while eating.

A nurse should never put before a patient milk that is sour, meat or soup that is turned, an egg that is bad, or vegetables underdone. Yet often I have seen these things brought in to the sick in a state perfectly perceptible to every nose or eye except the nurse's.

If the nurse is an intelligent being, and not a mere carrier of diets to and from the patient, let her exercise her intelligence in these things. How often we have known a patient eat nothing at all in the day, because one meal was left untasted (at that time he was incapable of eating), at another the milk was sour, the third was spoiled by some other accident. And it never occurred to the nurse to extemporize some expedient—it never occurred to her that as he had had no solid food that day he might eat a bit of toast (say) with his tea in the evening, or he might have some meal an hour earlier. A patient who can not touch his dinner at two, will often accept it gladly if brought to him at seven.

I would say to the nurse, have a rule of thought about your patient's diet; consider, remember how much he has had, and how much he ought to have to-day. If he is used to having his stimulus at one hour to-day, and to-morrow he does not have it, because she has failed in getting it, he will suffer. She must be always exercising her ingenuity to supply defects, and to remedy accidents.

One very minute caution—take care not to spill into your patient's saucer; in other words, take care that the outside bottom rim of his cup shall be quite dry and clean; if, every time he lifts his cup to his lips, he has to carry the saucer with it, or else to drop the liquid upon and to soil his sheet, or his bed-gown or pillow, or if he is sitting up, his dress, you have no idea what a difference this minute want of care on your part makes to his comfort and even to his willingness for food.

There are some common errors among women in charge of sick

respecting sick diet. One is the belief that beef tea is the most nutritive of all articles. Now, just try and boil down a pound of beef into beef tea, evaporate your beef tea, and see what is left of your beef. You will find that there is barely a tea-spoonful of solid nourishment to half a pint of water in beef tea; nevertheless, there is a certain reparative quality in it, we do not know what, as there is in tea; but it may safely be given in almost any inflammatory disease, and is as little to be depended upon with the healthy or convalescent where much nourishment is required. Again, it is an ever ready saw that an egg is equivalent to a pound of meat, whereas it is not at all so. Also, it is seldom noticed with how many patients, particularly of nervous or bilious temperament, eggs disagree. All puddings made with eggs are distasteful to them in consequence. An egg, whipped up with wine, is often the only form in which they can take this kind of nourishment. Again: if the patient has attained to eating meat, it is supposed that to give him meat is the only thing needful for his recovery; whereas scorbutic sores have been actually known to appear among sick persons which could be traced to no other source than this, viz.: that the nurse, depending on meat alone, had allowed the patient to be without vegetables for a considerable time, these latter being so badly cooked that he always left them untouched.

Again: milk and the preparations from milk are a most important article of food for the sick. Butter is the lightest kind of animal fat, and, though it wants the sugar and some of the other elements which there are in milk, yet it is most valuable both in itself and in enabling the patient to eat more bread. Cream, in many long chronic diseases, is quite irreplaceable by any other article whatever. It seems to act in the same manner as beef tea, and to most it is much easier of digestion than milk. In fact, it seldom disagrees. Cheese is not usually digestible by the sick, but it is pure nourishment for repairing waste; and I have seen sick, and not a few either, whose craving for cheese showed how much it was needed by them.

But, if fresh milk is so valuable a food for the sick, the least change or sourness in it makes it of all articles, perhaps, the most injurious; diarrhea is a common result of fresh milk allowed to become at all sour. Buttermilk, a totally different thing, is often very useful, especially in fevers.

In laying down rules of diet by the amounts of "solid nutri-

ment" in different kinds of food, it is constantly lost sight of what the patient requires to repair his waste—what he can take and what he can not. You can not diet a patient from a book; you can not make up the human body as you would make up a prescription—so many parts "carboniferous," so many parts "nitrogenous" will constitute a perfect diet for the patient. The nurse's observation here will materially assist the doctor—the patient's "fancies" will materially assist the nurse. For instance, sugar is one of the most nutritive of all articles, being pure carbon, and is particularly recommended in some books. But the vast majority of all patients, young and old, male and female, rich and poor, hospital and private, dislike sweet things; and, while I have never known a person take to sweets when he was ill who disliked them when he was well, I have known many fond of them when in health, who in sickness would leave off any thing sweet, even to sugar in tea; sweet puddings, sweet drinks are their aversion; the furred tongue almost always likes what is sharp or pungent. Scorbutic patients are an exception; they often crave for sweetmeats and jams.

Jelly is another article of diet in great favor with nurses and friends of the sick; even if it could be eaten solid, it would not nourish, but it is simply the height of folly to take $\frac{1}{8}$ oz. of gelatine and make it into a certain bulk by dissolving it in water, and then to give it to the sick, as if the mere bulk represented nourishment. It is now known that jelly does not nourish, that it has a tendency to produce diarrhea, and to trust to it to repair the waste of a diseased constitution is simply to starve the sick under the guise of feeding them. If 100 spoonfuls of jelly were given in the course of the day, you would have given one spoonful of gelatine, which spoonful has no nutritive power whatever.

And, nevertheless, gelatine contains a large quantity of nitrogen, which is one of the most powerful elements in nutrition; on the other hand, beef tea may be chosen as an illustration of great nutrient power in sickness, coëxisting with a very small amount of solid nitrogenous matter.

Dr. Christison says that "every one will be struck with the readiness with which" certain classes of "patients will often take diluted meat-juice or beef tea repeatedly, when they refuse all other kinds of food." This is particularly remarkable in "cases of gastric fever, in which," he says, "little or nothing else besides beef tea or diluted meat-juice" has been taken for weeks or even

months, "and yet a pint of beef tea contains scarcely $\frac{1}{4}$ oz. of any thing but water"—the result is so striking that he asks what is its mode of action? "Not simply nutrient— $\frac{1}{4}$ oz. of the most nutritive material can not nearly replace the daily wear and tear of the tissues in any circumstances. Possibly," he says, "it belongs to a new denomination of remedies."

It has been observed that a small quantity of beef tea added to other articles of nutrition augments their power out of all proportion to the additional amount of solid matter.

The reason why jelly should be innutritious and beef tea nutritious to the sick, is a secret yet undiscovered, but it clearly shows that careful observation of the sick is the only clue to the best dietary.

Chemistry has as yet afforded little insight into the dieting of sick. All that chemistry can tell us is the amount of "carboniferous" or "nitrogenous" elements discoverable in different dietetic articles. It has given us lists of dietetic substances, arranged in the order of their richness in one or other of these principles; but that is all. In the great majority of cases, the stomach of the patient is guided by other principles of selection than merely the amount of carbon or nitrogen in the diet. No doubt, in this as in other things, nature has very definite rules for her guidance, but these rules can only be ascertained by the most careful observation at the bedside. She there teaches us that living chemistry, the chemistry of reparation, is something different from the chemistry of the laboratory. Organic chemistry is useful, as all knowledge is, when we come face to face with nature; but it by no means follows that we should learn in the laboratory any one of the reparative processes going on in disease.

Again, the nutritive power of milk and of the preparations from milk, is very much undervalued; there is nearly as much nourishment in half a pint of milk as there is in a quarter of a pound of meat; but this is not the whole question, or nearly the whole. The main question is, what the patient's stomach can assimilate or derive nourishment from; and of this the patient's stomach is the sole judge. Chemistry can not tell this. The patient's stomach must be its own chemist. The diet which will keep the healthy man healthy, will kill the sick one. The same beef which is the most nutritive of all meat, and which nourishes the healthy man, is the least nourishing of all food to the sick man, whose half-dead

stomach can *assimilate* no part of it, that is, make no food out of it. On a diet of beef tea healthy men, on the other hand, speedily lose their strength.

I have known patients live for many months without touching bread, because they could not eat baker's bread. These were mostly country patients, but not all. Home-made bread or brown bread is a most important article of diet for many patients. The use of aperients may be entirely superseded by it.

To watch for the opinions, then, which the patient's stomach gives, rather than to read "analyses of foods," is the business of all those who have to settle what the patient is to eat—perhaps the most important thing to be provided for him after the air he is to breathe.

Now the medical man who sees the patient only once a day, or even only once or twice a week, can not possibly tell this without the assistance of the patient himself, or of those who are in constant observation on the patient. The utmost the medical man can tell is, whether the patient is weaker or stronger at this visit than he was at the last visit.

It is quite incalculable the good that would certainly come from such *sound* and close observation in this almost neglected branch of nursing.

A great deal too much against tea is said by wise people, and a great deal too much of tea is given to the sick by foolish people. A little tea or coffee restores them quite as much as a great deal, and a great deal of tea, and especially of coffee, impairs the little power of digestion they have.

Sleeplessness in the early night is from excitement generally, and is increased by tea or coffee; sleeplessness which continues to the early morning is from exhaustion often, and is relieved by tea. In general, the dry and dirty tongue always prefers tea to coffee, and will quite decline milk, unless with tea. Coffee is a better restorative than tea, but a greater impairer of the digestion. Let the patient's taste decide. You will say that, in cases of great thirst, the patient's craving decides that it will drink *a great deal* of tea, and that you can not help it. But in these cases be sure that the patient requires diluents for quite other purposes than quenching the thirst; he wants a great deal of some drink, not only of tea, but barley-water or lemonade, or soda-water and milk, as the case may be.

Lehman, quoted by Dr. Christison, says that, among the well and active, "the infusion of 1 oz. of roasted coffee daily will diminish the waste" going on in the body "by one-fourth," and Dr. Christison adds that tea has the same property. Now, this is actual experiment. Lehman weighs the man and finds the fact from his weight. It is not deduced from any "analysis" of food. All experience among the sick shows the same thing.

Cocoa is often recommended to the sick in lieu of tea or coffee. It is an oily starchy nut, having no restorative power at all, but simply increasing fat. It is pure mockery of the sick, therefore, to call it a substitute for tea. For any renovating stimulus it has, you might just as well offer them chestnuts instead of tea.

An almost universal error among nurses is in the bulk of the food, and especially the drinks they offer to their patients. Suppose a patient ordered 4 oz. brandy during the day, how is he to take this if you make it into four pints with diluting it? The same with tea and beef tea, with arrowroot, milk, etc. You have not increased the nourishment, you have not increased the renovating power of these articles, by increasing their bulk; you have very likely diminished both by giving the patient's digestion more to do, and, most likely of all, the patient will leave half of what he has been ordered to take, because he can not swallow the bulk with which you have been pleased to invest it. It requires very nice observation and care to determine what will not be too thick or strong for the patient to take, while giving him no more than the bulk which he is able to swallow.

A few words upon bedsteads and bedding; and principally as regards patients who are entirely, or almost entirely, confined to bed.

Feverishness is generally supposed to be a symptom of fever; in nine cases out of ten it is a symptom of bedding. The patient has had re-introduced into the body the emanations from himself, which day after day and week after week saturate his unaired bedding.

If you consider that an adult in health exhales by the lungs and skin in the twenty-four hours three pints at least of moisture, loaded with organic matter ready to enter into putrefaction; that in sickness the quantity is often greatly increased, the quality is always more noxious—just ask yourself next where does all this moisture go to? Chiefly into the bedding, because it can not go

anywhere else. And it stays there; because, except perhaps a weekly change of sheets, scarcely any other airing is attempted.

A nurse will be careful to fidgetiness about airing the clean sheets from clean damp, but airing the dirty sheets from noxious damp will never even occur to her. Besides this, the most dangerous effluvia we know of are from the excreta of the sick; these are placed, at least temporarily, where they must throw their effluvia into the underside of the bed, and the space under the bed is never aired; it can not be, with our arrangements. Must not such a bed be always saturated, and be always the means of re-introducing into the system of the unfortunate patient who lies in it, that excrementitious matter, to eliminate which from the body nature had expressly appointed the disease?

There is a prejudice in favor of a wide bed—I believe it to be a prejudice. All the refreshment of moving a patient from one side to the other of his bed is far more effectually secured by putting him into a fresh bed; and a patient who is really very ill does not stray far in bed. But it is said there is no room to put a tray down on a narrow bed. No good nurse will ever put a tray on a bed at all. If the patient can turn on his side, he will eat more comfortably from a bedside table; and on no account whatever should a bed ever be higher than a sofa. Otherwise the patient feels himself “out of humanity’s reach;” he can get at nothing for himself, he can move nothing for himself. If the patient can not turn, a table over the bed is a better thing. I need hardly say that a patient’s bed should never have its side against the wall. The nurse must be able to get easily to both sides of the bed, and to reach easily every part of the patient without stretching—a thing impossible if the bed be either too wide or too high.

If a bed is higher than a sofa, the difference of the fatigue of getting in and out of bed will just make the difference, very often, to the patient (who can get in and out of bed at all) of being able to take a few minutes’ exercise, either in the open air or in another room.

A patient’s bed should always be in the lightest spot in the room; and he should be able to see out of window.

I need scarcely say that the old four-post bed, with curtains, is utterly inadmissible, whether for sick or well. Hospital bedsteads are, in many respects, very much less objectionable than private ones.

There is reason to believe that not a few of the apparently unaccountable cases of scrofula among children proceed from the habit of sleeping with the head under the bedclothes, and so inhaling air already breathed, which is further contaminated by exhalations from the skin. Patients are sometimes given to a similar habit, and it often happens that the bedclothes are so disposed that the patient must necessarily breathe air more or less contaminated by exhalations from his skin. A good nurse will be careful to attend to this. It is an important part, so to speak, of ventilation.

It may be worth while to remark, that where there is any danger of bed-sores a blanket should never be placed *under* the patient. It retains damp, and acts like a poultice.

Never use any thing but light blankets as bed covering for the sick. The heavy cotton impervious counterpane is bad, for the very reason that it keeps in the emanations from the sick person, while the blanket allows them to pass through. Weak patients are invariably distressed by a great weight of bedclothes, which often prevents their getting any sound sleep whatever.

It is the unqualified result of all my experience with the sick, that second only to their need of fresh air is their need of light; that, after a close room, what hurts them most is a dark room; and that it is not only light, but direct sunlight, they want. People think the effect is upon the spirits only. This is by no means the case. The sun is not only a painter but a sculptor. You admit that he does the photograph. Without going into any scientific exposition, we must admit that light has quite as real and tangible effects upon the human body. But this is not all. Who has not observed the purifying effect of light, and especially of direct sunlight, upon the air of a room? Here is an observation within every body's experience. Go into a room where the shutters are always shut (in a sick room or a bedroom there should never be shutters shut), and though the room be uninhabited, though the air has never been polluted by the breathing of human beings, you will observe a close, musty smell of corrupt air—of air unpurified by the effect of the sun's rays. The mustiness of dark rooms and corners, indeed, is proverbial. The cheerfulness of a room, the usefulness of light in treating diseases is all-important.

A very high authority in hospital construction has said that people do not enough consider the difference between wards and

dormitories in planning their buildings; but I go further, and say that healthy people never remember the difference between *bed-rooms* and *sick-rooms*, in making arrangements for the sick. To a sleeper in health it does not signify what the view is from his bed. He ought never to be in it excepting when asleep, and at night. Aspect does not very much signify either (provided the sun reach his bedroom some time in every day, to purify the air), because he ought never to be in his bedroom except during the hours when there is no sun. But the case is exactly reversed with the sick, even should they be as many hours out of their beds as you are in yours, which probably they are not. Therefore, that they should be able, without raising themselves or turning in bed, to see out of window from their beds, to see sky and sunlight at least, if you can show them nothing else, I assert to be, if not of the very first importance for recovery, at least something very near it. And you should, therefore, look to the position of the beds of your sick one of the very first things. If they can see out of two windows instead of one, so much the better. Again, the morning sun and the midday sun—the hours when they are quite certain not to be up—are of more importance to them, if a choice must be made, than the afternoon sun. Perhaps you can take them out of bed in the afternoon, and set them by the window, where they can see the sun. But the best rule is, if possible, to give them direct sunlight from the moment he rises till the moment he sets.

Another great difference between the *bedroom* and the *sick-room* is, that the *sleeper* has a very large balance of fresh air to begin with, when he begins the night, if his room has been open all day, as it ought to be; the *sick* man has not, because all day he has been breathing the air in the same room, and dirtying it by the emanations from himself. Far more care is therefore necessary to keep up a constant change of air in the sick-room.

It is hardly necessary to add that there are acute cases (particularly a few ophthalmic cases, and diseases where the eye is morbidly sensitive), where a subdued light is necessary. But a dark north room is inadmissible even for these. You can always moderate the light by blinds and curtains.

In almost all diseases, the function of the skin is, more or less, disordered; and in many most important diseases nature relieves herself almost entirely by the skin. This is particularly the case

with children. But the excretion, which comes from the skin, is left there, unless removed by washing or by the clothes. Every nurse should keep this fact constantly in mind.

The amount of relief and comfort experienced by sick after the skin has been carefully washed and dried, is one of the commonest observations made at a sick bed. But it must not be forgotten that the comfort and relief so obtained are not all. They are, in fact, nothing more than a sign that the vital powers have been relieved by removing something that was oppressing them.

Care should be taken in all these operations of sponging, washing, and cleansing the skin, not to expose too great a surface at once, so as to check the perspiration, which would renew the evil in another form.

In several forms of diarrhea, dysentery, etc., where the skin is hard and harsh, the relief afforded by washing with a great deal of soft soap is incalculable. In other cases, sponging with tepid soap and water, then with tepid water, and drying with a hot towel, are beneficial.

Every nurse ought to be careful to wash her hands very frequently during the day. If her face too, so much the better.

Washing, however, with a large quantity of water has quite other effects than those of mere cleanliness. The skin absorbs the water, and becomes softer and more perspirable. To wash with soap and soft water is, therefore, desirable from other points of view than that of cleanliness.

The most important practical lesson that can be given to nurses is to teach them what to observe, how to observe; what symptoms indicate improvement, what the reverse; which are of importance, which are of none; which are the evidence of neglect, and of what kind of neglect.

All this is what ought to make part, and an essential part, of the training of every nurse. At present how few there are, either professional or unprofessional, who really know at all whether any sick person they may be with is better or worse.

The vagueness and looseness of the information one receives in answer to that much abused question, "Is he better?" would be ludicrous, if it were not painful.

Again, the question, How is your appetite? is often put when How is your digestion? is the question meant. No doubt the two things depend on one another; but they are quite different. Many

a patient can eat, if you can only "tempt his appetite." The fault lies in your not having got him the thing that he fancies; but many another patient does not care between grapes and turnips—every thing is equally distasteful to him. He would try to eat any thing which would do him good; but every thing "makes him worse." The fault here generally lies in the cooking. It is not his "appetite" which requires "tempting," it is his digestion which requires sparing; but good sick cookery will save the digestion half its work.

There may be four different causes, any one of which will produce the same result, viz., the patient slowly starving to death from want of nutrition:

1. Defect in cooking.
2. Defect in choice of diet.
3. Defect in choice of hours for taking diet.
4. Defect of appetite in patient.

Yet all these are generally comprehended in the one sweeping assertion that the patient has "no appetite."

Surely many lives might be saved by drawing a closer distinction; for the remedies are as diverse as the causes. The remedy for the first is to cook better; for the second, to choose other articles of diet; for the third, to watch for the hours when the patient is in want of food; for the fourth, to show him what he likes, and sometimes unexpectedly; but no one of these remedies will do for any other of the defects not corresponding with it.

Again, the question is sometimes put, Is there diarrhea? and the answer will be the same, whether it is just merging into cholera, whether it is a trifling degree brought on by some trifling indiscretion, which will cease the moment the cause is removed, or whether there is no diarrhea at all, but simply relaxed bowels.

In the case of infants, *every thing* must depend upon the accurate observation of the nurse or mother who has to report; and how seldom is this condition of accuracy fulfilled.

CHAPTER X.

PHYSICAL TRAINING AND GYMNASTICS.

EDUCATION may be divided into two parts, physical and mental. Of the former, EXERCISES or GYMNASTICS are the most extensive and the earliest portion.

Their extent is learned by an enumeration of them, viz.: Walking, Running, Leaping, Vaulting, Pole-leaping, Balancing, Skating, Carrying, Climbing, and Swimming; to which may be added Throwing the Discus, Rowing, Sailing, Riding, and Driving, though it will not be necessary to the purposes of this work to describe all.

The object of these exercises is to strengthen the muscular system, by subjecting it to a regular process of training, and to teach the means of employing it most advantageously. The expediency of their early acquisition is rendered evident by the first tendency of youth being directed to them, by the rapid progress made in them, and by the delight derived from them, at a period when the body is incapable, with real or solid advantage, of higher acquirements.

Their general utility will be questioned only by those who are not aware that the health and vigor of all the bodily organs depend on the proportioned exercise of each. In active exertion, the member exercised swells with the more frequent and more copious flow of blood, and heat is developed in it with greater abundance; and if we repeat the same motions many times after intervals of repose, all the muscles exercised become permanently developed; a perfection of action ensues in the member exercised, which it did not previously possess, any deformity by which it is affected is corrected, and strength and activity are acquired. That man, therefore, gains the most strength who engages in muscular exercises that require the application of much power, but which are sufficiently separated by intervals of repose.

It must be remembered, however, that in exercising particular muscles only, the others become weak. The strength of Marshal Saxe was sufficiently great to stop a chariot drawn at speed by four horses, by merely seizing the wheel; he bent pieces of silver with his fingers, made them into boats as he would with paper, and presented them to the ladies. Count Orloff, a Russian general, broke the shoe of a carriage horse in the same manner; and there are innumerable examples of similar feats of extraordinary strength.

Active exercises, at the same time, confer beauty of form; and they even contribute to impart an elegant air and graceful manners. If the exercise of a limb be continued for some time, the member swells, a painful sensation is experienced, which is termed lassitude, and a difficulty of contraction, which is the result of it. If the motion has been excessive, and the organic elements in the member have been acted upon beyond all physiological laws, inflammation would take place, and its functions be performed with great difficulty, if at all.

Such are the effects of exercise on the locomotive system, to all the functions of animated beings, so long as they are exercised with moderation, equality, and at due intervals, working for their own preservation. Of course, the general effect of active exercises is marked in proportion to the number of parts that share in the motion, or are brought into energetic action. In general exercise, the increase of organic action is not confined solely to the parts which are the seat of muscular contraction, but is repeated throughout all parts of the economy, and influences all the functions.

Thus, as to the vital or nutritive system, exercises taken when digestion is not going on, excite the digestive faculty; taken during its progress, they disorder that function. The arterial and venous circulations become more rapid by active exercise, which concludes by giving greater force to the tissue of the heart. It is the same with respiration and calorification. The same takes place with regard to nutrition, a function which exercise increases, not only in the muscles in movement, as we have just seen, but also in the bones, ligaments, vessels, and nerves.

By inducing cutaneous exhalation, it promotes the expulsion of injurious agents, produces a fresh color in persons who may have become pale through a sedentary life, and, to a certain extent, renders the human constitution, by means of habit, proof against the action of surrounding objects. The local effects of excessive

action, or those which take place in the members themselves, are, as before observed, inflammation of the muscles, rheumatism, like that arising from cold, and inflammation of the serous articular membranes. The general effects of excessive exercise may, in the same manner as all physical and moral stimulants, exhaust the vital faculties too quickly, communicate too much rigidity to the fibers, render the vessels varicose, bring on chronic rheumatism, destroy the freshness of the skin, blight the flower of youth, and produce old age and death before the time ordained by nature.

Ancient writers inform us that it was a rare thing to meet with athletes, who, having signalized themselves from their earliest youth in gymnastic combats, were of so excellent a constitution as to be able, when they had reached a more advanced age, to acquire the same honors on contending for the prize with grown men. Aristotle assures us, that among the conquerors in the Olympic Games, not more than two or three at the most could be found to whom nature had granted such an advantage.

In relation to the mental or thinking system, "every movement," says Cabanis, "becomes, in its turn, the principle or occasion of new impressions, of which the frequent repetition and the varied character must increase more and more the circle of our judgments, or tend unceasingly to rectify them. It hence follows that labor, giving to this word the most general signification, can not but have an influence infinitely useful on the habits of the understanding, and consequently also on those of the will." This argument is evidently applicable to varied exercise. On the contrary, "the great division of labor, so favorable to the perfecting of the arts, contracts more and more the understanding of workmen." Exercises, moreover, inspire confidence in difficult situations, and suggest resources in danger. Their consequent influence upon the moral conduct of man is such that, by a courage which is well founded, because it springs from a perfect knowledge of his own powers, he is often enabled to render the most important services to others.

Although the direct effect of exercise is not only to confer power on the muscular and other organs, but to multiply external impressions, and to occupy with them all the senses at once, still, minds thus disposed, in general, occupy themselves rather with objects of imagination and sentiment than with those which demand more complicated operation. The sense of muscular power impresses

determinations, which, carrying man perpetually out of himself, scarcely permit him to dwell upon impressions transmitted to his brain. The only action of that organ, during these exercises, seems to be limited to ordering the movements.

Hence, exercise, especially taken in the open air, amid new and varied objects of sight, is not favorable to reflection—to labors which demand the assemblage and concentration of all the powers of the mind. It is, on the contrary, in the absence of external impressions, that we become more capable of seizing many relations, and of following a long train of purely abstract reasoning. As life spent chiefly in active muscular exercises would leave in a state of repose those central organs that are subservient to the moral qualities and intellectual faculties, we agree with Seneca and Camper, in proscribing all such exercises, or such degrees of exercise, as would exhaust the mind, and render man incapable of aptitude in science, polite literature, and art.

The cultivation of bodily strength, in preference to every thing else, would establish only the right of the strongest, as it is found to exist in the origin of society. To cultivate the faculties of the mind exclusively, would produce only the weakness of sentiment or excess of passion. There is, for every individual, a means of making all these dispositions act in harmony; and the due blending of physical and moral education alone can produce it. Let it be remembered that young persons will much more easily be withdrawn from the application they ought to pay to the study of the sciences, by insipid recreations and trifling games, than by the fatiguing exercises necessary for their development and the preservation of their health, which, however, habit soon renders easy and delightful. To what vices do not a sedentary life and the practice of gaming give rise? while well-regulated exercises excite ambition to excel, and energy in the performance of every duty.

The philosophers of antiquity, such as Aristotle and Plato, regarded gymnastic exercises as of vast importance, and considered a state defective and badly organized where these exercises were not instituted. Colleges, called Gymnasias, were therefore established every-where, and superintended by distinguished masters. Accordingly, the illustrious men of the Grecian and Roman republics, even those who shone in literature and the fine arts, received the same physical education. The gymnastic exercises which are here recommended are not intended to produce athletes, but to

strengthen the human constitution. One exercise gives solidity, another address; and we may even say that the various kinds of exercise are sometimes opposed to each other. The strongest peasant is far from being the best runner; and the most vigorous dancer would probably be deficient in strength. There is, however, a mean to be found in the disposition of every individual to preserve both skill and strength, and this is what ought to be sought. For this purpose, it will suffice to practice young persons a few hours every day, sometimes at one exercise and sometimes at another; and even half an hour of vigorous gymnastic exercise each day will do much to establish and preserve both physical and mental health.

GENERAL DIRECTIONS.

It only remains for us to give a few directions as to the time, place, and circumstances of exercise. The best time for the elementary exercises is when the air is cool, as, even in summer, it is early in the morning, or after the sun has declined; and they should never immediately follow a meal. The best place for these elementary exercises is a smooth grass-plat, or a firm sandy sea-beach. Chasms, stones, and stakes are always dangerous. At the commencement, the coat and all unnecessary clothes should be laid aside; and all hard or sharp things should be taken from the pockets of the remaining dress. A very light covering on the head, as a straw hat, is best; the shirt-collar should be open, the breast being either exposed or thinly covered and the waistband of the trousers should not be tight.

As sudden transitions are always bad, exercise should begin gently, and should terminate in the same manner. The left hand and arm being commonly weaker than the right, they should be exercised till they become as strong. This custom is advantageous, not only for all military and mechanical gymnastic exercises, but also for all their operations. The being cooled too quickly is injurious. Therefore, drinking when very hot, or lying down on the cold ground, should be carefully avoided. No exertion should be carried to excess, as that only exhausts and enfeebles the body. Therefore, whenever the gymnast feels tired, or falls behind his usual mark, he should resume his clothes, and walk home. The moment exercise is finished, the clothes should always be put on, and the usual precautions adopted to prevent taking cold.

The necessary fittings-up of an exercising ground are a leaping-stand, a vaulting-horse, a balancing-bar, a climbing-stand, with ladders, poles, and ropes.

In most exercises, a belt or cincture is of utility; and it seems, in all ages, to have been naturally employed. The weakest savage, who could not follow others in the course without panting, would find, by placing his hand over his abdomen, and supporting the liver and other organs which descend into that cavity, that he was aided in running, and breathed more easily; and thence he would make for himself a belt. United in societies, men would still preserve their belt, though it might not seem particularly advantageous, except to those whose active mode of life approached a primitive state, such as travelers, couriers, and porters.

The Greeks put on their belts before they commenced wrestling; and many physicians, both ancient and modern, recommend the use of belts, as being to the whole of the body, and to the parts over which they are placed, what the exterior sheaths or aponeuroses are to the muscles—bands which embrace and keep firm the parts over which they are placed. The common belt has leathern straps, and buckles to fasten it, an iron ring, and a pocket. A double cincture for wrestling forms a very strong girth, which is put on by pupils who are very strong, when they wrestle. These belts may be made of different sizes, for youths of different ages: of five or six inches for tall youths and men, and of eight or ten inches for wrestlers. Their length is in proportion to the size of the person who uses them. These belts are very useful in strengthening the abdominal region in running and leaping. Riders, also, should furnish themselves with belts before getting on horseback, to prevent too violent motion of the viscera of the abdomen, and the disorders which may result from it. The use, indeed, of belts will by degrees prove their utility, and they will probably be worn even externally, without reference to physical exercises. They deserve this the more, because they give an air of lightness and elegance to the shape, and develop the chest.

The most useful thing in existence is dangerous, if improperly applied. In very young persons, the chest and abdomen have been compressed by fastening the belt too tight, or making it too wide; and disorders of digestion and respiration have consequently been caused by pushing in the false ribs. This is an imprudence that should be avoided. If the belt be too low, it may press too

much on the lower part of the belly ; if too high, it may disorder the chest. It must, therefore, be placed on the loins, so as to pass over the navel ; and, as said before, it must not be too tight.

TRAINING.

This is important in relation to various exercises to be described. The art of training for athletic exercises, or laborious exertions, consists in purifying the body and strengthening its powers, by certain processes, which are now to be described. The advantages of it, however, are not confined to pedestrians, wrestlers, or pugilists ; they extend to every one ; for, were training generally introduced, instead of medicine, for the prevention and cure of diseases, its beneficial consequences would assuredly prolong life and promote its happiness. Every physiologist knows that all the parts which compose the human body—solids as well as liquids—are successively absorbed and deposited. Hence ensues a perpetual renovation of them, regulated by the nature of our food and general habits. The health of all the parts, and the soundness of their structure, depend on this perpetual absorption and renovation. Now, nothing so effectually as exercise excites at once absorption and secretion. It accordingly promotes all the vital functions without hurrying them, renovates all the parts, and preserves them apt and fit for their offices.

It follows, then, that health, vigor, and activity chiefly depend upon exercise and regimen ; or, in other words, upon the observance of those rules which constitute the theory of training. The effect has accordingly corresponded with the cause assigned in this view of the subject, in every instance where it has been adopted ; and, although not commonly resorted to as the means of restoring invalids to health, there is every reason to believe that it would prove effectual in curing many obstinate diseases, such as bilious complaints, obesity, gout, and rheumatism.

The ancients entertained this opinion. They were, says a popular writer on medicine, by no means unacquainted with or inattentive to these instruments of medicine, although modern practitioners appear to have no idea of removing disease, or restoring health, but by pouring drugs into the stomach. Heroditus is said to have been the first who applied the exercises and regimen of the gymnasium to the removal of disease or the maintenance of

health. Among the Romans, Asclepiades carried this so far, that he is said, by Celsus, almost to have banished the use of internal remedies from his practice. He was the inventor of various modes of exercise and gestation in Rome. In his own person he afforded an excellent example of the wisdom of his rules, and the propriety of his regimen. Pliny tells us that, in early life, he made a public profession, that he would agree to forfeit all pretensions to the name of a physician should he ever suffer from sickness, or die but of old age; and, what is extraordinary, he fulfilled his promise, for he lived upward of a century, and at last was killed by a fall down stairs.

As to the locomotive system, modern experience sufficiently proves that exercise is the most powerful strengthener of the muscles, and of every part on which activity depends. In its operation on the vital system, training always appears to benefit the state of the lungs. Indeed, one of its most striking effects is to improve the wind; that is, to enable a man to draw a larger inspiration, and to hold his breath longer. As to the intellectual system, Sir J. Sinclair observes, that, by training, the mental faculties are also improved, the attention being more ready, and the perception more acute, owing probably to the clearness of the stomach, and better digestion.

It must, therefore, be admitted, that the most beneficial consequences to general health arise from training. The simplicity of the rules for it is assuredly a great recommendation to a trial of the experiment. The whole process may be resolved into the following principles: 1st, the evacuating, which cleanses the stomach and intestines; 2d, the sweating, which takes off the superfluities of fat and humors; 3d, the daily course of exercise, which improves the wind and strengthens the muscles; and, lastly, the regimen, which nourishes and invigorates the body. To those who are to engage in corporeal exercises beyond their ordinary powers, it is indispensably necessary. Pedestrians, therefore, who are matched either against others or against time, and pugilists who engage to fight, must undergo the training process before they contend. The issue of the contest, if their powers be nearly equal, will, in a great measure, depend upon their relative condition, as effected by training, at the hour of trial.

Training was known to the ancients, who paid much attention to the means of augmenting corporeal vigor and activity. Accord-

ingly, among the Greeks and Romans, certain rules of exercise and regimen were prescribed to the candidates for gymnastic celebrity. We are assured that, among the Greeks, previously to the solemn contests at the public games, the strictest temperance, sobriety, and regularity in living were indispensably requisite. The candidates were, at the same time, subjected to daily exercise in gymnasium, which continued during ten months, and which, with the prescribed regimen, constituted the preparatory training adopted by the *athletæ* of Greece. Among the Romans, the exercises of the *palæstra* degenerated from the rank of a liberal art, and became a profession, which was embraced only by the lowest of mankind, the exhibitions of the gladiators being bloody and ferocious spectacles, which evinced the barbarous taste of the people. The combatants, however, were regularly trained by proper exercise, and a strict observance of regimen. Pure and salubrious air was deemed a chief requisite. Accordingly, the principal schools of their *athletæ* were established at Capua and Ravenna, the most healthy places in Italy; and previous to entering on this regimen, the men were subjected to the evacuating process, by means of emetics, which they preferred to purgatives.

In the more early stages of training, their diet consisted of dried figs, new cheese, and boiled grain. Afterward animal food was introduced as a part of the athletic regimen, and pork was preferred to any other. Galen, indeed, asserts that pork contains more real nutriment than flesh of any other kind which is used as food by man. This fact, he adds, is decidedly proved by the example of the *athletæ*, who, if they live but for one day on any other kind of food, find their vigor manifestly impaired the next. The preference given to pork by the ancients, however, does not correspond with the practice of modern trainers, who entirely reject it; but in the manner of preparing the food, they exactly agree—roasting or broiling being by both preferred to boiling, and bread unfermented to that prepared by leaven. A very small quantity of liquid was allowed to the *athletæ*, and this was principally water. They exercised in the open air, and became familiarized by habit to every change of the weather, the vicissitudes of which soon ceased to affect them.

To exercise their patience, and accustom them to bear pain without flinching, they were occasionally flogged on the back with the branches of a kind of rhododendron, till the blood flowed. By

diminishing the quantity of the circulating liquid, this rough kind of cupping was also considered salutary! as obviating the tendency to plethora or redundancy of blood, to which they were peculiarly liable—a proof, if true, of the nourishing qualities of their food.

When the daily exercises of the *athletæ* were finished, they were refreshed by immersion in a tepid bath, where the perspiration and sordes—scurf, pustules, or filthy adhesions—were carefully removed from the surface of the body by the use of the strygil.* The skin was then diligently rubbed dry, and again anointed with oil. If thirsty, they were permitted to drink a small quantity of warm water. They then took their principal repast, after which they used no more exercise that day. They occasionally also went into the cold bath in the morning. They were permitted to sleep as many hours as they chose; and great increase of vigor, as well as of bulk, was supposed to be derived from long-continued and sound repose.† The sexual intercourse was strictly prohibited.

The manner of training among the ancients bears some resemblance to that practiced by the moderns. Perhaps it is because their mode of living and general habits were somewhat different from those of the present age, that a difference of treatment is now required to produce the same effects. The great object of training for running or boxing matches, is to increase the muscular strength, and to improve the free action of the lungs, or wind, of the person subjected to the process. Seeing that the human body is so capable of being altered and renovated, it is not surprising that the art of training should be carried to a degree of perfection almost incredible; and that, by certain processes, the muscular power, the breath (or wind), and the courage of man, should be so greatly improved as to enable him to perform the most severe or laborious undertakings.

That such effects have been produced is unquestionable; they are fully exemplified in the astonishing exploits of our most celebrated pedestrians and pugilists, which are the infallible results of such preparatory discipline. The skillful trainer attends to the state of the bowels, the lungs, and the skin; and he uses such

* For this instrument, rough coarse cloths are adopted, but not with advantage.

† Little sleep is now prescribed; but its quantity should depend upon circumstances of fatigue, etc.

means as will reduce the fat, and, at the same time, invigorate the muscular fiber. The patient is purged by drastic medicines; he is sweated by walking under a load of clothes, and by lying between feather beds; and his limbs are roughly rubbed. His diet is beef or mutton; his drink, strong ale. He is gradually inured to exercise by repeated trials in walking and running. By extenuating the fat, emptying the cellular substance, hardening the muscular fiber, and improving the breath, a man of the ordinary frame may be made to fight for one hour, with the utmost exertion of strength and courage, or to go over one hundred miles in twenty-four hours.

The most effectual process for training appears to be that practiced by Captain Barclay, which has not only been sanctioned by professional men, but has met with the unqualified approbation of amateurs. We are here, therefore, almost entirely indebted to it for details. According to this method, the pedestrian, who may be supposed in tolerable condition, enters upon his training with a regular course of physic, which consists of three doses. Glauber's salts are generally preferred; and from one ounce and a half to two ounces are taken each time, with an interval of four days between each dose. After having gone through the course of physic, he commences his regular exercise, which is gradually increased as he proceeds in the training.

When the object in view is the accomplishment of a pedestrian match, his regular exercise may be from twenty to twenty-four miles a day. He must rise at five in the morning, run half a mile at the top of his speed up-hill, and then walk six miles at a moderate pace, coming in about seven to breakfast, which should consist of beef-steaks or mutton-chops, underdone, with stale bread and old beer. After breakfast, he must again walk six miles at a moderate pace, and at twelve lie down in bed, without his clothes, for half an hour. On getting up, he must walk four miles, and return by four to dinner, which should also be beef-steaks or mutton-chops, with bread and beer, as at breakfast. Immediately after dinner, he must resume his exercise, by running half a mile at the top of his speed, and walking six miles at a moderate pace. He takes no more exercise for that day, but retires to bed about eight; and next morning he proceeds in the same manner.

Animal diet, it will be observed, is, according to this system, alone prescribed, and beef and mutton are preferred. All fat and greasy substances are prohibited, as they induce bile, and, conse-

quently, injure the stomach. The lean of meat contains more nourishment than the fat; and, in every case, the most substantial food is preferable to any other kind. Fresh meat is the most wholesome and nourishing. Salt, spiceries, and all kinds of seasonings, with the exception of vinegar, are prohibited. The lean, then, of fat beef, cooked in steaks, with very little salt, is the best; and it should be rather underdone than otherwise. Mutton, being reckoned easy of digestion, may be occasionally given, to vary the diet and gratify the taste. The legs of fowls are also esteemed.

It is preferable to have the meat broiled, as much of its nutritive quality is lost by roasting or boiling. It ought to be dressed, so as to remain tender and juicy; for it is by these means that it will be easily digested, and afford most nourishment. Biscuit and stale bread are the only preparations of vegetable matter which are permitted to be given; and every thing inducing flatulency must be carefully avoided. In general, the quantity of aliment is not limited by the trainer, but left entirely to the discretion of the pedestrian, whose appetite should regulate him in this respect.

With respect to liquors, they must be always taken cold; and home-brewed beer, old, but not bottled, is the best. A little red wine, however, may be given to those who are not fond of malt liquor; but never more than half a pint after dinner. It is an established rule to avoid liquids as much as possible; and no more liquor of any kind is allowed to be taken than is requisite to quench the thirst.

After having gone on in this regular course for three or four weeks, the pedestrian must take a four-mile sweat, which is produced by running four miles in flannel, at the top of his speed. Immediately on returning, a hot liquor is prescribed, in order to promote the perspiration; and of this he must drink one pint. It is termed the sweating liquor, and is composed of one ounce of carraway seed, half an ounce of coriander seed, one ounce of root-liquorice, and half an ounce of sugar-candy, mixed with two bottles of cider, and boiled down to one-half. He is then put to bed in his flannels, and, being covered with six or eight pair of blankets and a feather bed, must remain in this state for twenty-five or thirty minutes, when he is taken out, and rubbed perfectly dry. Being then well wrapped in his great-coat, he walks out gently for two miles, and returns to breakfast, which should consist of roasted fowl. He afterward proceeds with his usual exercise.

These sweats are continued weekly, till within a few days of the performance of the match; or, in other words, he must undergo three or four of these operations. If the stomach of the pedestrian be foul, an emetic or two must be given about a week before the conclusion of the training. He is now supposed to be in the highest condition.

Besides his usual or regular exercise, a person under training ought to employ himself, in the intervals, in every kind of exertion which tends to activity, such as golf, cricket, bowls, throwing quoits, etc., so that during the whole day both body and mind may be constantly occupied. Although the chief parts of the system depend upon sweating, exercise, and feeding, yet the object to be obtained by the pedestrian would be defeated, if these were not adjusted each to the other, and to his constitution. The trainer, before he proceeds to apply his theory, should make himself acquainted with the constitution and habits of his patient, that he may be able to judge how far he can, with safety, carry on the different parts of the process. The nature of the patient's disposition should also be known, that every cause of irritation may be avoided; for, as it requires great patience and perseverance to undergo training, every expedient to soothe and encourage the mind should be adopted.

The skillful trainer will, moreover, constantly study the progress of his art, by observing the effect of its processes, separately and in combination. If a man retain his health and spirits during the process, improve in wind, and increase in strength, it is certain that the object aimed at will be obtained; but, if otherwise, it is to be apprehended that some defect exists, through the unskillfulness or mismanagement of the trainer, which ought instantly to be remedied by such alterations as the circumstances of the case may demand. It is evident, therefore, that in many instances the trainer must be guided by his judgment, and that no fixed rules of management can, with absolute certainty, be depended upon for producing an invariable and determinate result. In general, however, it may be calculated that the known rules are adequate to the purpose, if the pedestrian strictly adhere to them, and the trainer bestow a moderate degree of attention to his state and condition during the progress of training.

It is impossible to fix any precise period for the completion of the training process, as it depends upon the previous condition of

the pedestrian; but from two to three months, in most cases, will be sufficient, especially if he be in tolerable condition at the commencement, and possessed of sufficient perseverance and courage to submit cheerfully to the privations and hardships to which he must unavoidably be subjected. The criterion by which it may be known whether a man is in good condition—or, what is the same thing, whether he has been properly trained—is the state of the skin, which becomes smooth, elastic, and well-colored, or transparent. The flesh is also firm, and the person trained feels himself light and full of spirits. In the progress of the training, his condition may also be ascertained by the effect of the sweats, which cease to reduce his weight, and by the manner in which he performs one mile at the top of his speed. It is as difficult to run a mile at the top of one's speed as to walk a hundred; and, therefore, if he performs this short distance well, it may be concluded that his condition is perfect, or that he has derived all the advantages which can possibly result from the training process.

POSITION.

Before entering into a detail of exercises, it is necessary to attend to what is termed position. A standing position is the action by which we keep ourselves up. Indeed, this state, in which the body appears in repose, is itself an exercise, for it consists in a continued effort of many muscles; and the explanation we shall give of it will much facilitate that of walking.

Every one has observed that during sleep, or a fainting fit, the head inclines forward and falls upon the breast. In this case, it is in accordance with the laws of gravity; for the head, resting upon the vertebræ which support it at a point of its basis which is nearer the posterior than anterior part, can not remain in an upright position in standing, except by an effort of the muscles at the back of the neck; it is the cessation of this effort that causes it to fall forward. The body also is unable to remain straight without fatigue. The vertebral column being placed behind, all the viscera or parts contained by the chest and belly are suspended in front of it, and would force it to bend forward unless strong muscular fibers held it back. A proof of this may be seen in pregnant and dropsical women, who are compelled, in consequence of the anterior part of the body being heavier than usual, to keep the verte-

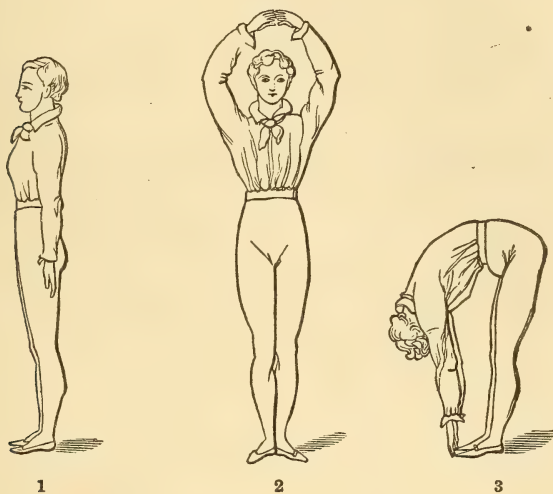
bral column more fixed, and even thrown backward. The same observation may be made with regard to the pelvis, basin, or lowest part of the trunk, which by its conformation would bend upon the thighs, if not kept back by the great mass of muscular fibers that form the hips. In front of the thighs, again, are the muscles, which, by keeping the knee-pan in position, are the means of preventing the leg from bending. Lastly, the muscles forming the calves, by contracting, are the means of preventing the leg from bending upon the foot.

Such is the general mechanism of the standing position. It is, therefore, as we observed, a concurrence of efforts; almost all the extending muscles are in a state of contraction all the time that this position is maintained, and the consequence is, a fatigue which can not be endured for any great length of time. Hence we see persons in a standing position rest the weight of their body, first on one foot, then on another, for the purpose of procuring momentary ease to certain muscles. For this reason, also, standing still is more fatiguing than walking, in which the muscles are alternately contracted and extended.

A question of importance on this subject is, What position of the feet affords the greatest solidity in standing? We will not enter into a detail of the numerous controversies by which some have defended or repudiated the position with the toes turned forward or outward; it will be sufficient to state the fact, that the larger the base of support, the firmer and more solid will the position be, and to adopt, as a *fundamental* one, the military position, which has been found practically the best by those who have nothing else to do but to walk. The equal squareness of the shoulders and body to the front is the first great principle of position. The heels must be in a line, and closed; the knees straight; the toes turned out, with the feet forming an angle of sixty degrees; the arms hanging close to the body; the elbows turned in, and close to the sides; the hands open to the front, with the view of preserving the elbow in the position above described; the little fingers lightly touching the clothing of the limbs, with the thumb close to the forefinger; the belly rather drawn in, and the breast advanced, but without constraint; the body upright, but inclining forward, so that the weight of it may principally bear upon the forepart of the feet; the head erect, and the eyes straight to the front. (Fig. 1.)

To these brief directions I must add that, in standing, the whole

figure should be in such a position that the ear, shoulder, haunch, knee, and ankle are all in a line; that it must be stretched as much as possible, by raising the back of the head, drawing in the chin, straightening the spine, rising on the hips, and extending the legs; that the object of keeping the back thus straight is to allow of standing longer without fatigue; that it is important to expand the chest, and to throw the shoulders back, with the shoulder-blades, or scapulæ, quite flat behind; and that though, in military instructions, the body is thus inclined forward in standing without arms, yet when these are assumed, the body is immediately thrown about two inches backward, into a nearly perpendicular position. This position, therefore, will be modified in walking, and especially in ordinary walking; but it is an excellent fundamental position, and it can not be too accurately acquired.



EXTENSION MOTIONS.—In order to supple the figure, open the chest, and give freedom to the muscles; the first three movements of the extension motions, as laid down for the sword exercise, are ordered to be practiced. It is, indeed, observed that too many methods can not be used to improve the carriage, and banish a rustic air; but that the greatest care must be taken not to throw the body backward instead of forward, as being contrary to every true principle of movement. I accordingly here introduce these extension motions, adding the fourth and fifth, and prefixing to each the

respective word of command, in order that they may be the more distinctly and accurately executed.

Attention—The body is to be erect, the heels close together, and the hands hanging down on each side. First extension motion.—This serves as a caution, and the motions tend to expand the chest, raise the head, throw back the shoulders, and strengthen the muscles of the back.

One—Bring the hands and arms to the front, the fingers lightly touching at the points, and the nails downward; then raise them in a circular direction well above the head, the ends of the fingers still touching, the thumbs pointing to the rear, the elbows pressed back, and shoulders kept down. (Fig. 2.)

Two—Separate and extend the arms and fingers, forcing them obliquely back, till they come extended on a line with the shoulders; and as they fall gradually from thence to the original position of attention, endeavor, as much as possible, to elevate the neck and chest. These two motions should be frequently practiced, with head turned as much as possible to the right or left, and the body kept square to the front; this tends very materially to supple the neck, etc.

Three—Turn the palms of the hands to the front, pressing back the thumbs with the arms extended, and raise them to the rear, till they meet above the head; the fingers pointing upward, with the ends of the thumbs touching.

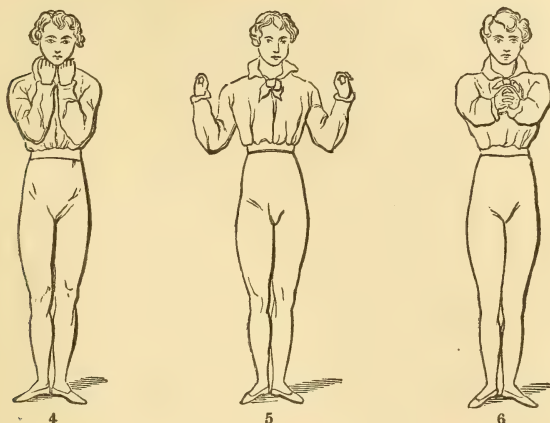
Four—Keep the arms and knees straight, and bend over from the hips till the hands touch the feet, the head being brought down in the same direction. (Fig. 3.)

Five—With the arms flexible and easy from the shoulders, raise the body gradually, so as to resume the position of Attention. The whole should be done very gradually, so as to feel the exertion of the muscles throughout. To these extension motions, drill-sergeants, in their instructions, add the following:

One—the forearms are bent upon the arms upward and toward the body, having the elbows depressed, the shut hands touching on the little-finger sides, and the knuckles upward, the latter being raised as high as the chin, and at the distance of about a foot before it. (Fig. 4.)

Two—While the arms are thrown forcibly backward, the forearms are as much as possible bent upon the arms, and the palmar sides of the wrists are turned forward and outward. (Fig. 5.) The

two motions are to be repeatedly and rather quickly performed. A modification of the same movement is performed as a separate extension motion, but may be given in continuation, with the numbers following these, as words of command.



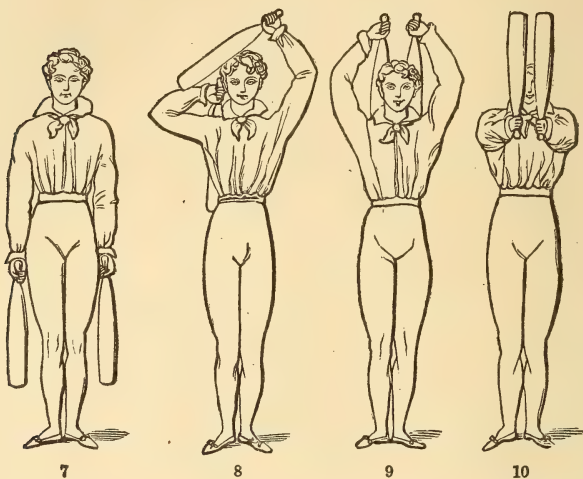
Three—The arms are extended at full length in front, on a level with the shoulder, the palms of the hands in contact. (Fig. 6.)

Four—Thus extended, and the palms retaining their vertical position, the arms are thrown forcibly backward, so that the backs of the hands may approach each other as nearly as possible. These motions, also, are to be repeatedly and rather quickly performed. Another extension motion, similarly added, consists in swinging the right arm in a circle, in which, beginning from the pendent position, the arm is carried upward in front, by the side of the head, and downward behind, the object being, in the latter part of this course, to throw it as directly backward as possible. The same is then done with the left arm. Lastly, both arms are thus exercised together. These motions are performed quickly.

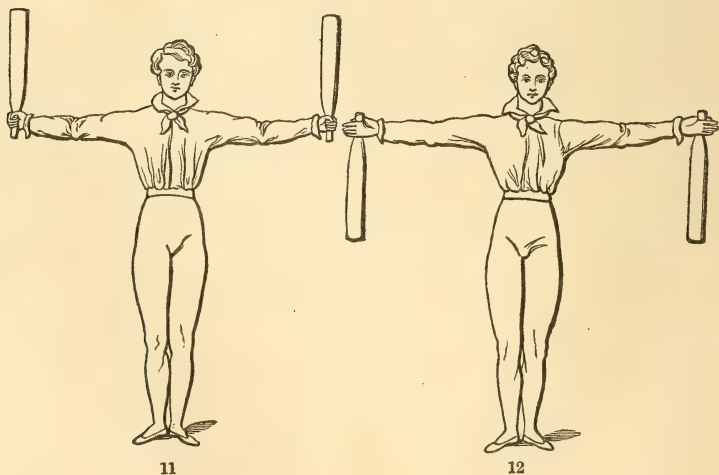
THE INDIAN CLUB EXERCISE.

1st. A club is held by the handle, pendent on each side (Fig. 7); that in the right hand is carried over the head and left shoulder, until it hangs perpendicularly on the right side of the spine (Fig. 8); that in the left hand is carried over the former, in exactly the opposite direction (fig. 8), until it hangs on the opposite side;

holding both clubs still pendent, the hands are raised somewhat higher than the head (fig. 9); with the clubs in the same position,

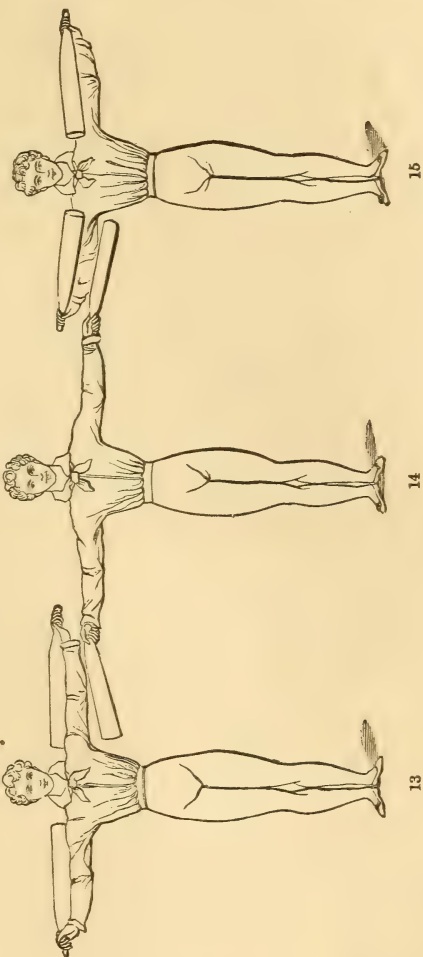


both arms are extended outward and backward (fig. 12); they are lastly dropped into the first position. All this is done slowly.



2d. Commencing from the same position, the ends of both clubs are swung upward until they are held, vertically and side by side,

at arm's length in front of the body, the hands being as high as the shoulders (fig. 10); they are next carried in the same position, at arm's length, and on the same level, as far backward as possible (fig. 11); each is then dropped backward until it hangs vertically downward (fig. 12); and this exercise ends as the first. Previous, however, to dropping the clubs backward, it greatly improves this exercise, by a turn of the wrist upward and backward, to carry the clubs into a horizontal position behind the shoulders, so that, if long enough, their ends would touch (fig. 13); next, by a turn of the wrist outward and downward, to carry them horizontally outward (fig. 14); then by a turn of the wrist upward and forward, to carry them into a horizontal position before the breast (fig. 15); again to carry them horizontally outward; and finally to drop them backward as already explained; and thence to the first position. All this is also done slowly.



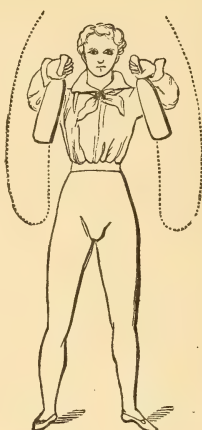
3d. The clubs are to be swung by the sides, first separately, and then together, exactly as the hands were in the last extension motion.

4th. A club is held forward and upright in each hand, the forearm being placed horizontally, by the haunch on each side (fig. 16); both are thrown in a circle upward, forward, and, by a turn of the wrist, downward and backward, so as to strike under the

arms (fig. 17); by an opposite movement, both are thrown back again in a similar circle, till they swing over the shoulders (fig. 18); and this movement is continued as long as agreeable.



16



17

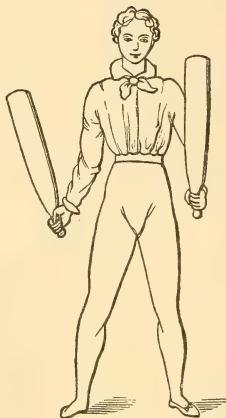


18

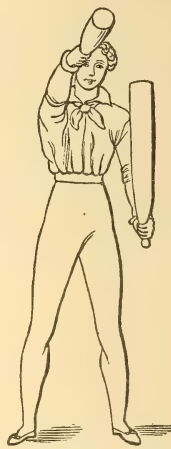
5th. The clubs are held obliquely upward in each hand, lying on the front of the arms (fig. 19); that in the right hand is allowed to



19



20

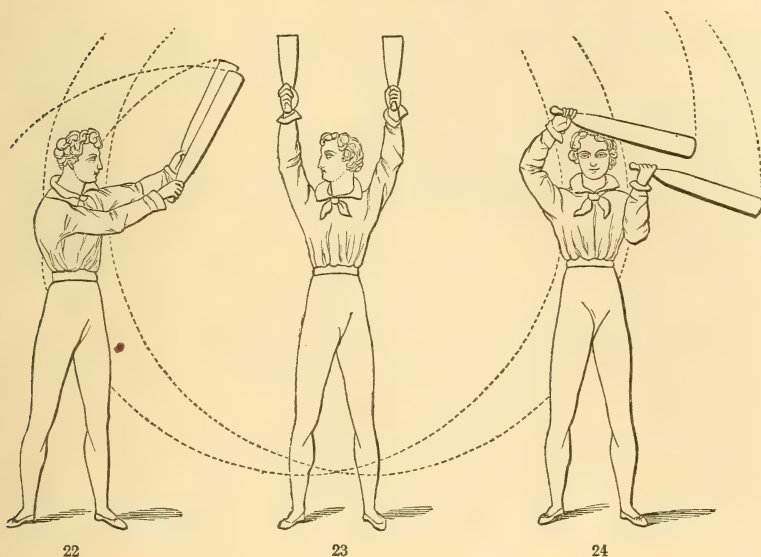


21

fall backward (fig. 20), and swings downward, forward to the extent of the arm, and as high as the head (fig. 21); the moment this club begins to return from this point, in precisely the same direc-

tion, to the front of the arm, that in the left hand is allowed to drop backward, and to perform the advancing portion of this course in the time that the other performs the returning portion, so that each is, at the same time, swinging in an opposite direction.

6th. From either of the first positions now given, the clubs are, by a turn of the body and extension of the arms, thrown upward and laterally (fig. 22); make, at the extent of the arms, and in front of the figure, a circle in which they sweep downward by the feet and upward over the head (fig. 23), and fall in a more limited curve toward the side on which they began (fig. 24), in such a manner that the outer one forming a circle around the shoulder and the inner one round the head, (both passing swiftly through the

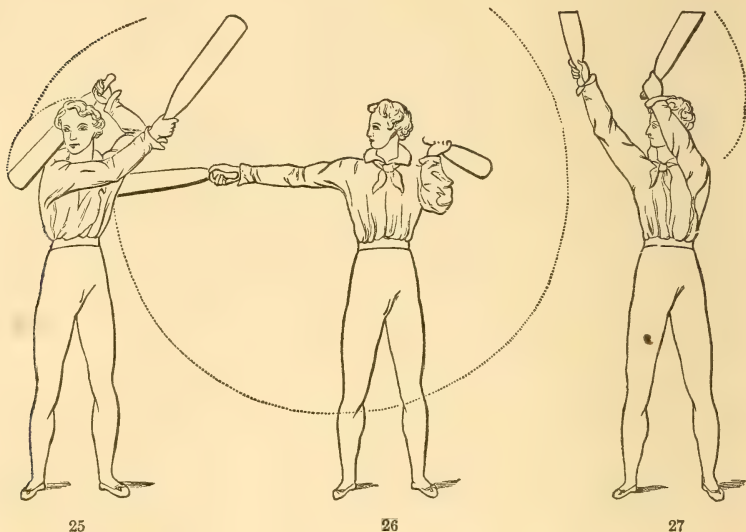


position in the last figure of the first exercise,) they return to the first position; this is repeated to the other side; and so on alternately.

7th. Beginning from either first position, the body being turned laterally—for example, to the left—the club in the right hand is thrown upward in that direction at the full extent of the arm (fig. 25), and makes the large circle in front and curve behind, as in the last exercise (fig. 26), while the club in the left hand makes, at the same time, a smaller circle in front of the head and behind the shoulders (figs. 25, 26, and 27), until crossing each other before

the head (rather on the right side), their movements are exactly reversed, the club in the right hand performing the small circle round the head, while that in the left performs the large one, and these continue to be repeated to each side alternately.

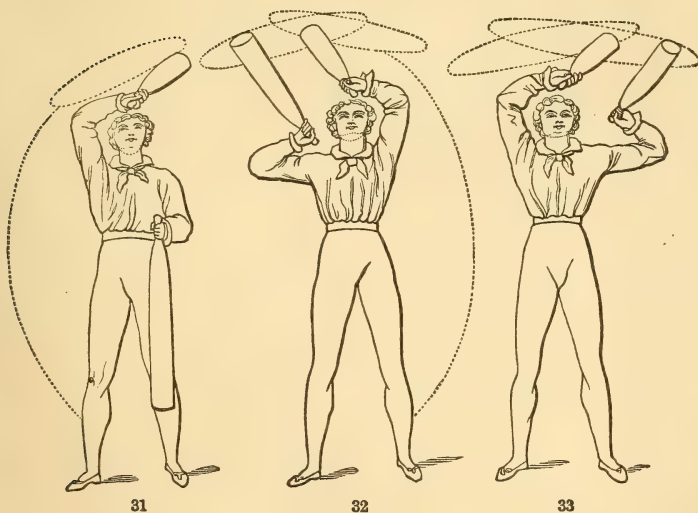
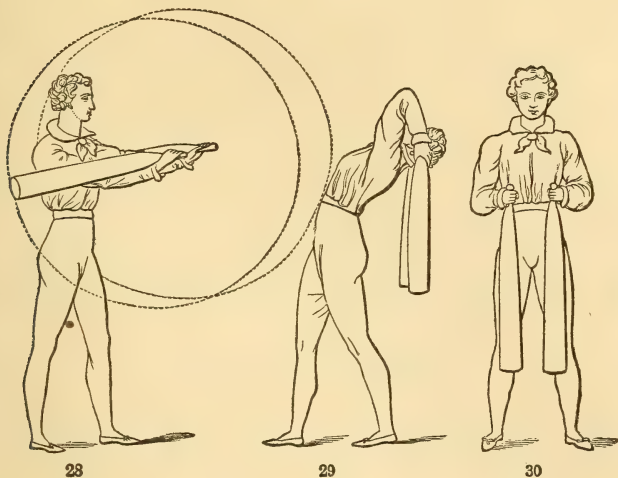
8th. The clubs being in either first position, the body is turned to one side—the left, for example—and the clubs being thrown out in the same direction, make each, by a turn of the wrist, a circle three times on the outer side of the outstretched arms (fig. 28); when completing the third circle, the clubs are thrown higher to the same side, sweeping together in the large circle in front, as in the second exercise, the body similarly turning to the right; but,



instead of forming the smaller curve behind, both are thrown over the back (fig. 29); from this position the clubs are thrown in front, which is now toward the opposite side, and the same movements are reversed; and so it proceeds alternately to each side.

9th. In this exercise, the clubs are reversed, both being pendent in front, but the ends of their handles being upward on the thumb sides of the hand. (Fig. 30.) The exercise consists chiefly in describing with the ends of the clubs two circles placed obliquely to each other over the head. For this purpose, the club in the right hand is, in a sweep to that side, first elevated behind the head, and

thence passing to the left (fig. 31), the front, the right (fig. 32) behind, (where its continuation is indicated in fig. 32, and completed in fig. 33,) thus forms its circle; meanwhile the club in the left



hand, commencing when that in the right was behind the head, has passed on the back of its circle to the right (fig. 32), while that in the right hand has passed on the front of its circle to the same

side (fig. 32, the parts performed in both being marked by complete lines, and the parts to be done merely indicated); and they continue, that in the right hand by the back, and that in the left hand by the front, toward the left side (fig. 33), and so on at pleasure, circling over the head.

[Although but two-thirds of the body, viz., from the loins upward, are called into operation in this exercise, its importance must be estimated by the fact that they are precisely those requiring constant artificial practice, being naturally most exempted from exertion. As an adjunct to TRAINING, there is nothing in the whole round of gymnastic performances that will be found of more essential service than this exercise with the Indian clubs. It demands but little muscular exertion, and calls chiefly upon that portion of the system which it finds in a state of comparative repose.]

LOCOMOTIVE EXERCISES.

In walking, the position is nearly the same as that already described under the head POSITION.

The head should be upright, easy, and capable of free motion, right, left, up, or down, without affecting the body. The body must be kept erect and square to the front, having the breast projected, and the stomach retracted, though not so as to injure either freedom of respiration or ease of attitude. The shoulders should be kept moderately and equally back and low; and the arms should hang unconstrainedly by the sides. The balance on the limbs must be perfect; the knees straight, and the toes turned out as described; the weight of the body should be thrown forward, as this facilitates progression. The military position in walking does not essentially differ from this, except in points that exclusively regard the soldier; as that the head be kept well up, and straight to the front, and the eyes not turned to the right or left; the arms and hands kept perfectly steady by the sides, and on no account suffered to move or vibrate, care, however, being taken that the hand does not cling to the thigh, or partake in the least degree of the movement of the limb. We may remark, however, that the volunteer armies, both of the North and South, during the late gigantic war in this country, as good troops as were ever mustered, threw off very much of the old-fashioned, constrained style of movement, and adopted quite a free swing of the hands.

THE BALANCE STEP.

The object of this is to teach the free movement of the limbs, preserving, at the same time, perfect squareness of the shoulders, with the utmost steadiness of body; and no labor is spared to attain this first and most essential object, which forms, indeed, the very foundation of good walking. The instructor must be careful that a habit be not contracted of drooping or throwing back a shoulder at these motions, which are intended practically to show the true principles of walking, and that steadiness of body is compatible with perfect freedom in the limbs.

1. WITHOUT GAINING GROUND.—To insure precision, the military words of command are prefixed.

Caution—Balance step without gaining ground, commencing with the left foot. The left foot is brought gently forward with the toe at the proper angle to the left, the foot about three inches from the ground, the left heel in line with the toe of the right foot.

Rear—when steady, the left foot is brought gently back (without a jerk), the left knee a little bent, the left toe brought close to the right heel. The left foot in this position will not be so flat as to the front, as the toe will be a little depressed.

Front—When steady, the word *Front* will be given as above, and repeated to the rear three or four times.

Halt—to prevent fatigue, the word *Halt* will be given, when the left foot, either advanced or to the rear, will be brought to the right. The instructor will afterward cause the balance to be made on the left foot, advancing and retiring the right in the same manner.

2. GAINING GROUND BY THE WORD "FORWARD."—*Front*—On the word *Front*, the left foot is brought gently to the front, without a jerk; the knee gradually straightened as the foot is brought forward, the toe turned out a little to the left, and remaining about three inches from the ground. This posture is continued for a few seconds only in the first instance, till practice gives steadiness in the position.

Forward—On this word of command, the left foot is brought to the ground, at about thirty inches from heel to heel, while the right foot is raised at the same moment, and continues extended to the rear. The body remains upright, but inclining forward; the head erect, and neither turned to the right nor left.

Front—On the word *Front*, the right foot is brought forward, and so on.

WALKING.

Of all exercises, this is the most simple and easy. The weight of the body rests on one foot, while the other is advanced; it is then thrown upon the advanced foot, while the other is brought forward, and so on in succession. In this mode of progression, the slowness and equal distribution of motion is such that many muscles are employed in a greater or less degree; each acts in unison with the rest, and the whole remains compact and united. Hence, the time of its movements may be quicker or slower, without deranging the union of the parts or the equilibrium of the whole. It is owing to these circumstances that walking displays so much of the character of the walker; that it is light and gay in women and children, steady and grave in men and elderly persons, irregular in the nervous and irritable, measured in the affected and formal, brisk in the sanguine, heavy in the phlegmatic, and proud or humble, bold or timid, etc., in strict correspondence with individual character.

The utility of walking exceeds that of all other modes of progression. While the able pedestrian is independent of stage-coaches and hired horses, he alone fully enjoys the scenes through which he passes, and is free to dispose of his time as he pleases. To counterbalance these advantages, greater fatigue is doubtless attendant on walking; but this fatigue is really the result of previous inactivity; for daily exercise, gradually increased, by rendering walking more easy and agreeable, and inducing its more frequent practice, diminishes fatigue in such a degree that very great distances may be accomplished with pleasure, instead of painful exertion.

Moderate walking exercises the most agreeable influence over all the functions. In relation to health, walking accelerates respiration, and circulation increases the temperature and cutaneous exhalation, and excites appetite and healthful nutrition. Hence, as an anonymous writer observes, the true pedestrian, after a walk of twenty miles, comes in to breakfast with freshness on his countenance, healthy blood coursing in every vein, and vigor in every limb, while the indolent and inactive man, having painfully crept over a mile or two, returns to a dinner which he can not digest.

In all individuals, walking is indispensably joined with the exercise of one or more of the external senses. It receives from the cerebral faculties a powerful influence, by which it is either accelerated or prolonged. Walking upon soft, even ground, at a moderate pace, is an exercise that may be taken without inconvenience, and even with advantage, after a meal. It is adapted for convalescents, who are not yet allowed to take stronger exercise. A firm, yet easy and graceful walk, is by no means common. There are few men who walk well if they have not learned to regulate their motions by the lessons of a master, and this instruction is still more necessary for ladies. Having now, therefore, taken a general view of the character and utility of walking, I subjoin some more particular remarks on the

GENERAL MECHANISM OF WALKING.—For the purpose of walking, we first bear upon one leg the weight of the body, which pressed equally on both. The other leg is then raised, and the foot quits the ground by rising from the heel to the point. For that purpose, the leg must be bent upon the thigh, and the thigh upon the pelvis; the foot is then carried straight forward, at a sufficient height to clear the ground without grazing it. To render it possible, however, to move this foot, the haunch, which rested with its weight upon the thigh, must turn forward and out. As soon as, by this movement, this foot has passed the other, it must be extended on the leg, and the leg upon the thigh, and in this manner, by the lengthening of the whole member, and without being drawn back, it reaches the ground at a distance in advance of the other foot, which is more considerable according to the length of the step, and it is placed so softly on the ground as not to jerk or shake the body in the slightest degree. As soon as the foot, which has been placed on the ground, becomes firm, the weight of the body is transported to the limb on that side, and the other foot, by a similar mechanism, is brought forward in its turn. In all walking, the most important circumstance is, that the body incline forward, and that the movement of the leg and thigh spring from the haunch, and be free and natural. Viewed in this way, the feet have been well compared to the spokes of a wheel, the weight of the body falling upon them alternately.

This exercise puts in action the extensors and flexors of the thighs and legs, a great number of the muscles of the trunk, and more or less those of the shoulder, according to the rapidity of

the pace, and the greater or less degree of projection communicated to the arm, which, in this exercise, acts as a balancer of the body, the motion being exactly the reverse of that of the corresponding leg. It draws the fluids more into the inferior than superior members; it gives but little strength to the latter. Walking may be performed in three different times—slow, moderate, or quick—which somewhat modify its action.

THE SLOW WALK, OR MARCH.—In the march, the weight of the body is advanced from the heel to the instep, and the toes are turned out. This being done, one foot—the left, for instance—is advanced, with the knee straight and the toe inclined to the ground, which, without being drawn back, it touches before the heel, in such a manner, however, that the sole, at the conclusion of the step, is nearly parallel with the ground, which it next touches with its outer edge; the right foot is then immediately raised from the inner edge of the toe, and similarly advanced, inclined, and brought to the ground; and so on in succession. Thus, in the march, the toe externally first touches, and internally last leaves the ground; and so marked is this tendency that, in the stage step, which is meant to be especially dignified—as the posterior foot acquires an awkward flexure when the weight has been thrown on the anterior—in order to correct this, the former is for an instant extended, its toe even turned backward and outward, and its tip internally alone rested on the ground, previous to its being, in its turn, advanced. Thus the toe's first touching and last leaving the ground is peculiarly marked in this grandest form of the march. This pace should be practiced until it can be firmly and gracefully performed.

THE MODERATE AND THE QUICK PACE.—These will be best understood by a reference to the pace which we have just described, the principal difference between them being as to the advance of the weight of the body, the turning out of the toes, and the part of the foot which first touches and last leaves the ground. We shall find that the times of these two paces require a further advance of the weight, and suffer successively less and less of turning out the toes, and of this extended touching with the toe, and covering the ground with the foot.

THE MODERATE PACE.—Here the weight of the body is advanced from the heel to the ball of the foot; the toes are less turned out; and it is no longer the toe, but the ball of the foot,

which first touches and last leaves the ground; its outer edge, or the ball of the little toe, first breaking the descent of the foot, and its inner edge, or the ball of the great toe, last projecting the weight. Thus, in this step, less of the foot may be said actively to cover the ground; and this adoption of nearer and stronger points of support and action is essential to the increased quickness and exertion of the pace.

The mechanism of this pace has not been sufficiently attended to. People pass from the march to the quick pace they know not how; and hence all the awkwardness and embarrassment of their walk when their pace becomes moderate, and the misery they endure when this pace has to be performed by them, unaccompanied, up the middle of a long and well-lighted room, where the eyes of a brilliant assembly are exclusively directed to them. Let those who have felt this but attend to what we have here said; the motion of the arms and of every other part depends on it.

THE QUICK PACE.—Here the weight of the body is advanced from the heel to the toes; the toes are least turned out; and still nearer and stronger points of support and action are chosen. The outer edge of the heel first touches the ground, and the sole of the foot projects the weight.

These are essential to the increased quickness of this pace; and it is important to remark, as to all these paces, that the weight is successively more thrown forward, and the toes are successively less turned out. In the grandest form of the march, the toes, as we have seen, are, in the posterior foot, though but for a moment, even thrown backward; in the moderate pace, they have an intermediate direction; and in the quick pace, they are thrown more directly forward.

It is this direction of the toes, and still more the nearer and stronger points of support and action—namely, the heel and sole of the foot—which are essential to the quick pace so universally practiced, but which, together with the great inclination of the body, being ridiculously transferred to the moderate pace, make unfortunate people look so awkward, as we shall now explain. The time of the moderate pace is, as it were, filled up by the more complicated process of the step—by the gradual and easy breaking of the descent of the foot on its outer edge, or the ball of the little toe, by the deliberate positing of the foot, by its equally gradual and easy projection from its inner edge, or the ball of the great

toe. The quick pace, if its time be lengthened, has no such filling up; the man stumps at once down on his heel, and could rise instantly from his sole, but finds that, to fill up his time, he must pause an instant; he feels he should do something, and does not know what; his hands suffer the same momentary paralysis as his feet; he gradually becomes confused and embarrassed; deeply sensible of this, he at last exhibits it externally; a smile or titter arises, though people do not well know at what; but, in short, the man has walked like a clown, because the mechanism of his step has not filled up its time, or answered its purpose.

I trust that the mechanism and time of the three paces are here simply, clearly, and impressively described. The following is the more imperfect, but still useful, military description, with its words of command:

SLOW STEP.—*March.*—On the word March, the left foot is carried thirty inches to the front, and, without being drawn back, is placed softly on the ground, so as not to jerk or shake the body; seventy-five of these steps to be taken in a minute. (The recruit is ordered to be carefully trained, and thoroughly instructed in this step, as an essential foundation for arriving at accuracy in the paces of more celerity. This is the slowest step at which troops are to move.)

QUICK STEP.—The cadence of the slow pace having become perfectly habitual, a quick time is next taught, which is 108 steps in a minute, each of thirty inches, making 270 feet in a minute.

Quick, March.—The command Quick, March, being given with a pause between them, the word Quick is to be considered as a caution, and the whole to remain perfectly steady. On the word March, the whole move off, conforming to the directions already given. (This pace is applied generally to all movements by large as well as small bodies of troops; and, therefore, the recruit is trained and thoroughly instructed in this essential part of his duty.)

DOUBLE MARCH.—The directions for the march apply, in a great degree, to this step, which is 150 steps in a minute, each of thirty-six inches, making 450 feet in a minute.

Double March.—On the word Double March, the whole step off together with the left feet, keeping the head erect and the shoulders square to the front; the knees are a little bent; the body is more advanced than in the other marches; the arms hang with

ease down the outside of the thighs. The person marching is carefully habituated to the full pace of thirty-six inches, otherwise he gets into the habit of a short trot, which defeats the obvious advantages of this degree of march. In the army, great advantage attends the constant use of the plummet; and the several lengths swinging the times of the different marches in a minute, are as follows:

				IN.	HUN.
Slow time	. .	75 steps in a minute	24,96
Quick time	. .	108 " "	12,03
Double march	. .	150 " "	6,26

A musket-ball, suspended by a string which is not subject to stretch, and on which are marked the different required lengths, answers the above purpose, may be easily acquired, and is directed to be frequently compared with an accurate standard in the adjutant's possession. The length of the plummet is to be measured from the point of suspension to the center of the ball. In practicing all these paces, the pupils should also be accustomed to march upon a narrow plane, where there is room for only one foot, upon rough uneven ground, and on soft ground which yields to the foot.

Walking exercises a greater influence over the economy when it takes place on inclined planes than on a flat surface. In ascending, the effort is made in a direction directly opposed to the general tendency of heavy bodies; the body is strongly bent, the upper part of the trunk in advance; the action of the posterior and anterior muscles of the thigh is considerable; and circulation and respiration are speedily accelerated by the violence of the muscular contractions. In descending, on the contrary, effort is requisite to keep up the body, which tends to obey the laws of gravitation; and to moderate the tendency of gravity to project forward in the center, the body is thrown back, the sacro-spinal mass and the posterior muscles of the neck are strongly contracted, the knees bent, and the steps much shorter. Men with long flat feet, and the heel bone little projecting, are bad walkers.

A good walker will do six miles an hour, for one hour, on a good road. If in perfect training, he may even do twelve miles in two hours. Eighteen miles in three hours is a much more doubtful affair, though some are said to have achieved it.

At the rate of five miles an hour, pedestrians of the first class will do forty miles in eight hours, and perhaps fifty in ten. At the rate of four miles an hour, a man may walk any length of time.

In the art of walking quickly, the circumstance, perhaps, most important is, to keep the knees somewhat bent and springy.

RUNNING.

“Running,” says one of our gymnasiarchs, “only differs from walking by the rapidity of the movement.” This is quite incorrect. Running is precisely intermediate to walking and leaping; and, in order to pass into it from walking, the motion must be changed. A series of leaps from each foot alternately must be performed, in order to constitute it; the foot which is left behind quits the ground before the foot in advance is firmly fixed, so that the center of gravity remains uncertain in passing from one leg to the other, which forms a series of leaps, and renders a fall a common occurrence.

POSITION IN RUNNING.—The upper part of the body is slightly inclined forward; the head slightly thrown backward, to counteract the gravity forward; the breast is freely projected; the shoulders are steady, to give a fixed point to the auxiliary muscles of respiration; the upper parts of the arms are kept near the sides; the elbows are bent, and each forms an acute angle; the hands are shut, with the nails turned inward; and the whole arms move but slightly, in order that the muscles of respiration on the chest may be as little as possible disturbed, and follow only the impulse communicated by other parts. There exists, in fact, during the whole time of running, a strong and permanent contraction of the muscles of the shoulder and arm, which, though very violent, is less serviceable to the extended movements than to keep the chest immoveable, toward which the arms are brought close, the flexors and adductors of which are especially contracted.

ACTION IN RUNNING.—At every step, the knees are stretched out; the legs kept as straight as possible; the feet almost graze the ground; the tread is neither with the mere balls of the toes, nor with the whole sole of the foot; and the spring is made rapidly from one foot to the other, so that they pass each other with great velocity.

But the abdominal members are not the only ones in motion, although it is in them that the greatest development takes place. Throughout the whole time of running, a strong and permanent contraction of the muscles of the shoulder, arm, and forearm takes

place; this, though very violent, is less for the purpose of aiding motion than of preserving the immobility of the thorax, which is pressed upon the whole thoracic member, whose flexors and adductors are strongly contracted. The degree of velocity, however, must be proportioned to the length of the steps. Too slow and long, as well as too quick and short, steps may be equally injurious.

RESPIRATION.—Speed, and, still more, duration in running, are in proportion to the development of the lungs, and consequently the volume of oxygen and blood which they can combine in their parenchyma at each respiratory movement. Thus, of two men, one having the abdominal members developed, and the other, possessing good lungs, the former will run with the greatest speed for a short distance, but, if the distance be considerable, he will soon be gained upon by the latter. A runner, after performing a certain space, is seized with a difficulty of breathing, long before the repetition of the contractions has produced fatigue in the abdominal members. To excel, therefore, in running, requires, like walking and dancing, a peculiar exercise. As the muscular contractions depend, for their principle of excitement, on the respiration, the chest should be firmly fixed, so as both to facilitate this and to serve as a point of support for the efforts of the lower members. The best runners are those who have the *best wind*, and keep the breast dilated for the longest time.

During the whole time of running, long inspirations and slow expirations are of the greatest importance; and young persons can not be too early accustomed to them. To facilitate respiration toward the end of the race, the upper part of the body may be leant a little forward. Running should cease as soon as the breath becomes very short and a strong perspiration takes place.

MODERATE RUNNING.—This is performed gently and in equal time, and may be extended to a considerable space. In practicing this pace, it is necessary to fix the distance to be run; and this should always be proportioned to the age and strength of the runners. This exercise, more than all others, requires to be proceeded with in a progressive manner. If, at the first trial, you run too fast or too long a time, it may produce spitting of blood and headache, or aneurisms of the heart and principal vessels, especially if the weather be dry and cold.

A moderately cool day may, accordingly, be chosen, a distance of three hundred feet measured, and the runners placed in a line

at one end. They may then start, trot at the rate of about seven feet in a second to the opposite end, turn, and continue until they reach the spot whence they started. Frequent repetition of this is sufficient at first. Afterward they may run over this space two, three, or four times without stopping; and the exercise may then be limited to this. It may, on subsequent days, be extended to five, six, and seven times the distance.

Fatigue is then generally quite removed; and the run may either be continued further, or the runners, if neither heated nor winded, may accelerate their pace. They may next attempt a mile in ten minutes; and repeat this, till, being gradually less and less heated, they can either extend the distance or diminish the time in any measured proportion.

RAPID RUNNING.—This is best applied to a short space in a little time. Three hundred feet, upon an open plain, will not generally be found too great. At each end of this, a cross line may be drawn, and the runners may arrange themselves on one line, while the umpire is placed at the other. On the latter giving the signal, the running commences, and he who first passes him gains the race. It is extremely useful always to run beyond the line at a gentler pace, as it gradually lowers the actions of the respiratory and circulating systems.

Running is more easy on a level surface, but should be practiced on ground of every variety—upon long, square, and circular plots of ground. The pupils should be accustomed to turn promptly out of the direct line—a faculty not possessed by animals, and exceedingly useful when pursued. They should also run up hill, and particularly down, as it is dangerous unless frequently practiced.

FEATS IN RUNNING.—The practice of running may be carried to a greater degree of perfection.

A quarter of a mile in a minute is good running; and a mile in four minutes, at four starts, is excellent.

The mile was, perhaps, never run in four minutes, but it has been done in four minutes and a half.

A mile in five minutes is good running. Two miles in ten minutes is oftener failed in than accomplished. Four miles in twenty minutes is said to puzzle the cleverest.

Ten miles an hour is done by all the best runners. Fifteen miles in an hour and a half has never, perhaps, been done.

EFFECTS OF RUNNING.—In running, the mass of our organs is agitated by violent and constant shocks, which succeed with rapidity; but the abdominal members are not the only ones in motion, although they are those in which the development is most considerable. Running develops not only the abdominal members, but has a strong influence upon the respiratory parts. This exercise is particularly suited to young persons, especially those of a lymphatic temperament. It should not, however, be practiced after meals.

LEAPING.

Leaping consists principally in the sudden straightening of the articulations, performed by a strong and instantaneous contraction of the extensors, by which the body is rapidly projected from the ground.

The leaping-stand consists of two moveable posts, above six feet high, having, above the second foot from the ground, holes bored through them, at the distance of an inch from each other; two iron pins to be placed in the hole at any height; a cord, at least ten feet long, passed over these pins, and kept straight by two sand-bags at its ends, and weights upon the feet of the posts, to prevent them from falling. The leap over the cord is made from the side of the stand toward which the heads of the pegs are turned; so that, if the feet should touch the cord, it will easily and instantly fall.

In all kinds of leaping, it is of great importance to draw in and retain the breath at the moment of the greatest effort, as it gives the chest more solidity to support the rest of the members, impels the blood into the muscular parts, and increases their strength. The hands, also, should be shut, and the arms pendent. The extent of the leap in height, or horizontally, is proportioned to the power employed and the practice acquired. As it is performed with facility only in proportion to the strength exerted, and the elasticity and suppleness of the articulations and muscles of the lower extremities, much exercise is necessary to attain that degree of perfection which lessens all obstacles, and supplies the means of clearing them without danger. Lightness and firmness are the qualities necessary for leaping; every thing should be done to acquire these two qualifications, for without them leaping is neither graceful nor safe.

THE HIGH LEAP WITHOUT A RUN.—In this the legs and feet are closed; the knees are bent till the calves nearly touch the thighs; the upper part of the body, kept straight, is inclined a little forward; and the arms thrown in the direction of the leap, which increases the impulse, preserves the balance, and may be useful in a fall.

The vertebral column, and consequently the whole of the trunk, being thus bent forward, a strong contraction of the muscles preserves this bending till the moment when the leap takes place; then, by sudden contraction of the extensors, the body stretches out like a bow when the string breaks, is thus jerked forward, and remains suspended a longer or shorter time in the air.

In descending, the person should be rather inclined forward; and the fall should take place on the forepart of the feet, bending the knees and haunches, to deaden the shock and descent; for the direct descent in this leap, if not thus broken, would send its shock from the heels to the spine and head, and might occasion injury. To perpendicularity in this leap, should be added lightness, so that scarcely any noise from the leap should be heard.

This leap, without a run, may be practiced at the height,

1. Of the knees.
2. Of the middle of the thighs.
3. Of the hips.
4. Of the lower ribs.

THE HIGH LEAP—With a Run.—The run preceding the leap should never exceed ten paces, the distance between the point of springing and the cord being equal to half the cord's height from the ground. The view of the leaper should be directed first to the spot whence he is to spring; and, the moment he has reached that to the cord, accustoming himself to spring from either foot, and from both feet.

The instant the spring is made, or (if it be made with one foot) immediately after, the feet should be closed, and the knees drawn forcibly toward the chin. Throughout, flexibility and skill, not violent exertion, should be displayed. This leap, with a run, may be practiced at the height,

1. Of the hips.
2. Of the lower ribs.
3. Of the pit of the stomach.
4. Of the breast.

5. Of the chin.
6. Of the eyes.
7. Of the crown of the head.

Feats in High Leaping.—A good high leaper will clear five feet; a first-rate one, five and a-half; and an extraordinary one, six feet. A case is on record of one man having cleared an extended cord at the height of fourteen feet, while another, it is said, jumped to the height of seventeen feet, which was three times the height of his own body.*

THE LONG LEAP—Without a Run.—This is generally performed upon straight firm ground, on which there are marks, or parallel lines, at equal distances. The first of these lines is the place to leap from. The leapers succeed each other, and clear a greater number of lines according to their strength and skill. Here the feet are closed; the whole weight rests upon the balls of the toes, and the body is inclined forward. Both arms are then swung forward, backward, then drawn strongly forward, and, at the same instant, the limbs, having been bent, are extended with the utmost possible force.

In performing this leap, the hands and body must be bent forward, especially at the end of the movement, when the leaper alights. On level ground, twelve feet is a good standing leap, and fourteen is one of comparatively rare occurrence.

THE LONG LEAP—With a Run.—This leap is best executed with a run; and we have, therefore, dwelt less upon the former. Here, also, the body must be inclined forward.

The run should be made over a piece of firm, and not slippery ground, to the extent of ten, fifteen, or twenty paces; should consist of small steps, increasing in quickness as they approach the point of springing; and these should be so calculated as to bring upon the point that foot with which the leaper is accustomed to spring. The spring, as here implied, should be performed with one foot, and the arms thrown forcibly toward the place proposed to be reached. The height as well as the length of the leap must be calculated; for the leap is shortened by not springing a proper height.

In the descent, the feet are closed, the knees bent, the upper part of the body inclined forward, and the toes first touch the

* The author means, with the aid of a spring-board.

ground, at which moment, a light spring, and afterward some short steps are made, in order to avoid any sudden check. In a much extended leap, however, alighting on the toes is impossible. A sort of horizontal swing is then achieved, by which the leaper's head is little higher than his feet, and his whole figure is almost parallel with the ground; and, in this case, to alight on the toes is impossible. Care must here be taken not to throw the feet so much forward as to cause the leaper to fall backward at the moment of descent. The ground must be cleared, or the leap is imperfect and unfair.

This leap may be practiced at,

1. Double the length of the body.
2. Twice and a half that length.
3. Three times that length.

Feats in Long Leaping.—On level ground, twenty feet is a first-rate leap; twenty-one is extraordinary; and twenty-two is very rarely accomplished. With a run and a leap, on a slightly inclined plane, twenty-three feet is the longest leap which I have seen recorded.

Of the various kinds of leaps, the first or simple leap, which is produced principally by the extension of the abdominal members, which impel the body either straight upward, in the vertical leap, or obliquely upward and forward, in the horizontal or rather parabolic leap, requires, in addition to the contraction of the abdominal members, especially if the leap be executed with the feet close together, a violent action of the muscles of the abdomen, upper parts of the back, anterior parts of the loins, and of the thorax and shoulders.

THE DEEP LEAP.—This may be made either with or without the hands. In either way, to avoid the shock, the body must be kept in a bent position, and the fall be upon the balls of the toes. When the hands are used, the leaper places them in front of the feet; and during the descent, the weight of the body is checked by the former, and passes in a diminished state to the latter; so that the shock is obviated.

A flight of steps serves the purpose of this exercise. The leaper ascends a certain number; leaps from the side; gradually increases the number; and, by practicing progressively higher, finds it easy to leap from heights which at first appalled him. He afterward combines the long and deep leaps. For this purpose, a

rivulet, which has one bank high and the opposite one low, is very favorable. Children can easily take a leap of nine feet in descending.

THE DEEP LEAP BACKWARD, FROM A REST ON THE HANDS.— This exercise is first performed from platforms of various heights, and from walls of various elevations. The object is to lessen the shock that the legs and body experience in reaching the ground at a depth of more than six or seven feet, and to diminish the distance, if possible, at the same time that it diminishes the violence and velocity of the fall. All this is easily managed by observing the following rules :

Suppose the pupil placed upon a platform of four or six feet in height, he must first examine the place he is about to leap to, so as to select the most favorable part, free from stones and other obstacles. He will then approach the extremity of the platform, with his back toward it, and bend his body. Having taken up this position securely, he will lean his head a little forward, raise his toes from the platform, and remain for an instant supported by the arms. The body then begins to extend, and the legs to lengthen downward and backward ; the arms follow this movement, bend, and support the body by the hands, which have a secure resting-place on the edge of the platform. This descending movement is executed as slowly as possible ; the arms stretch out to their utmost length, till the body is sustained by the last phalanx of the fingers, or touches the ground with the feet. If it does not reach the ground, the pupil drops gently down on the tips of his toes, bends himself, and recovers his upright position.

There is another mode of descending, when the last resting-place for the hands is the top of a counterfort, or prop on a wall without a counterfort. This consists in seizing the last hold with the right hand for instance, and in hanging firmly by that hand, while the left, being at liberty, is lowered and pushes back the body from the projecting stones in the walls, to prevent injury in the descent. The impulse thus given is, however, very trifling, and solely to avoid hurt, without increasing the violence of the fall, which ought to be facilitated on reaching the ground by the rules already given. By these means, the height of a wall is relatively diminished, for a man who hangs suspended by his arms, has six feet less to drop than he who has his feet where he might put his hands.

The down leap, unless gradually practiced, may produce ruptures of the diaphragm. When, however, the elevation from which the leap is taken is gradually increased, the eye becomes accustomed to measure the most extensive distances fearlessly, at the same time that by practice the abdominal members learn to bend properly under the weight of the trunk, and thereby preserve the organs contained in it from serious injuries. In this kind of leap, the shocks will be diminished by retaining the air in the chest, which may be done by closing the glottis.

Persons who have long toes, powerful calves, and prominent heels, are the best adapted for leaping.

VAULTING.

In vaulting, by a spring of the feet, the body is raised, and by leaning the hands upon a fixed object, it at the same time receives, in oblique vaulting; a swing which facilitates the action. As the inclination thus given to the body depends not merely on the feet, but on the hands, we have the power to guide the body in any direction.

This exercise is conveniently practiced on the vaulting bar, which rests upon two or three posts. It may be performed with or without running. The beginner may at first be allowed a run of a few paces, ending in a preparatory spring; and he may afterward be allowed only a spring.

OBLIQUE VAULTING.—To mount, the vaulter must place himself in front of the bar, make a preparatory spring with the feet close, fix at that moment both hands upon the bar, heave himself up, and swing the right leg over. The body, supported by the hands, may then easily descend into the riding position. To dismount, the vaulter, supported by the hands, must extend the feet, make a little swing forward, and a greater one backward, so as to heave both feet behind over the bar, and spring to the ground with them close.

To do this he must first clearly define to himself the place where he intends to fall. Then, having placed both hands upon the bar, he should first bend and then extend the joints, so as to raise the body with all his strength, and throw his legs, kept close, high over the bar. (Fig. 34.) When the right hand (if he vault to the right) quits the bar, the left remains, the feet reach the ground on

the opposite side, and he falls on both feet, with the knees projected, and the hands ready, if necessary, to break the fall.

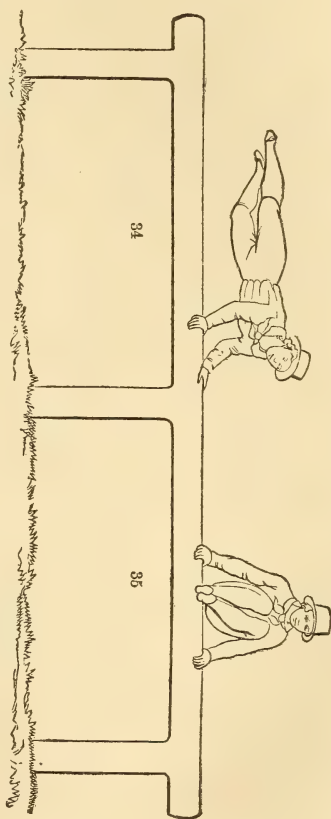
In vaulting to the right, the left foot passes in the space which was between both the hands, the right hand quits the bar, and the left guides the body in the descent. In vaulting to the left, the right foot passes in the space, which was between both hands, the left hand quits the bar, and the right guides the body in its descent. As, however, it is difficult for beginners to vault either way, this is not to be attempted until after sufficient practice in the way which may be easiest. The vaulter may then, with a preparatory spring, try the following heights:

1. That of the pit of the stomach.
2. That of a middling-sized horse.
3. His own height or more.

STRAIGHT-FORWARD VAULTING.

For this purpose, both hands must be placed at such distance on the bar as to give room for the feet between them; the body should be forcibly raised, the knees drawn up toward the breast, and the feet brought between the hands, without moving them from their place. (Fig. 35.) This exercise should be practiced until it can be done easily.

This straight-forward vault may have three different terminations. When the feet are in the space between the hands, the vaulter may stand upright. He may pass his feet to the opposite side, while he seats himself. He may continue the leap over the seat, through the arms, letting both hands go at once after the legs have passed.



LEAPING WITH A POLE.

This is a union of leaping and vaulting, in which the vaulter, instead of supporting himself upon a fixed object, carries with him a pole, which he applies to whatever spot he chooses. In supporting the body by a pole during the leap, a great deal also depends upon balancing, as well as on the strength of the arms and legs.

THE HIGH LEAP WITH A POLE.—The pole prescribed for this exercise is the planed stem of a straight-grown fir, from seven to ten feet long, and about two inches thick at the bottom. Such a pole naturally diminishes toward the top; and it is better to plane off the lower end a little. Care must be taken that it be sufficiently strong; such as make a crackling noise during the leap should be immediately thrown aside.

The learner, supposed to be already expert in leaping and vaulting, may at first place himself before a small ditch, with a pole, which he holds in such a manner, that the right hand be about the height of the head, and the left about that of the hips, and in this case he must fix it in the ditch. He must then, by making a spring with his left foot, endeavor to rest the weight of his body upon the pole, and, thus supported, swing himself to the opposite bank. In this swing, he passes his body by the right of the pole, making, at the same time, a turn, so that, at the descent, his face is directed to the place whence he leaped. The faults usually committed by the beginner, consist in his trusting to the pole the whole weight of the body, and in losing the necessary purchase by keeping at too great a distance from it.

This leap can not be made with proper force and facility unless the fixing of the pole in the ground and the spring are made exactly at the same moment. To acquire this, the learner should place himself at the distance of a moderate pace in front of the ditch, raise the left foot and the pole together, plant both together, the former in the spot whence he intends making the spring, and the latter in the ditch, then instantly swing himself round the pole to the opposite bank. As soon as he can easily take the proper position and balance, he may endeavor to swing his legs higher; and in proportion as he becomes more expert, he must place his hands higher up the pole, in order to have a greater swing. He must afterward make a previous run of two, three,

or four paces, gradually increasing in velocity, and always taking care that the springing foot and the pole come to the ground at the same moment. When this difficulty is overcome, he may practice the exercise over the leaping-stand.

In leaping over the cord, the learner must take the pole in both hands; make a rather quick run; conclude this with the spring, and planting the pole at the same moment; raise rapidly his whole body, by means of this spring and a powerful support on the pole, and swing over the cord; turning his body so that, at the descent, his face is directed to the place whence he sprang. This is a general description of the high leap; but it is necessary to explain the parts into which it may be divided, as follows:

1. In the handling the pole, it is immaterial, as to the lower hand, whether the thumb or the little finger be uppermost; the upper hand must have the thumb upward. The position of the upper hand is regulated by that of the lower one; as this advances higher up, the former must be proportionally raised. The lower hand then must be placed at a height proportionate to that of the leap; thus, if the latter be six feet, the lower hand must be at least from five and a half to six feet from the lower end of the pole. The leaper is, after a little practice, enabled to seize the pole in the proper way, from a mere glance at the leap.

2. The preparatory run of from twelve to fifteen paces is accelerated as the leaper approaches the cord. Upon this run principally depend the facility and the success of the leap. As the spring can take place only with one foot, and as this must arrive correctly at the springing place, it is necessary that the order of the steps should be arranged so as to effect this object. If the leaper should be obliged to correct himself by making a few steps, either longer or shorter, just before making the spring, the leap is rendered difficult.

3. The fixing of the pole in the ground and the spring must take place at the same instant, because by that means the upper and lower members operate together, no power is lost, and the swing is performed with great facility. The place of the pole, however, varies with the height of the leaps; in leaps of about four feet, the distance of one foot from the cord is sufficient; in higher leaps, it should be from one and a half to two feet. The best plan is to have a small pit dug in front of the cord, and to remove the stand from it, as the height of the leap increases; or the stand may re-

main at a foot and a half from the pit, and the learner be taught to make all the leaps from it. The spring is made with one foot, at the distance of two, three, four, or five feet from the plant of the pole. If the leaper keep the left hand lowest, he must spring with the left foot, and *vice versâ*.

4. The swing upward is effected by the force of the spring, the support of the lower, and the pull of the upper hand; but principally by the propulsion of the run, which, being suddenly modified by the fixing of the pole, has its horizontal direction changed into a slanting ascent, and carries the body of the leaper over the cord. The leaper must carefully observe that the spring of the foot and the plant of the pole be in the direction of the preparatory run.

5. The turning of the body during the swinging upward is necessary. When the leaper is going to spring, he has his face turned toward the object of the leap; but, as his feet swing, his body turns round the pole. When his feet have passed over the other side of the cord, the head is still considerably on this side. Speedily, the middle of his body is on the other side of the cord, and he begins the descent. It would be impossible to descend in this position otherwise than with his face directed to the place where the leap was commenced.

6. The quitting of the pole, during the leap, is effected by giving it a push with one hand, at the moment of greatest height, and this causes it to fall on the inner side of the cord.

7. The carrying of the pole over the cord is more difficult. The leaper must then raise the pole a little from the ground at the moment of beginning the descent, and instantly elevate the lower part of it with the lowest hand, and depress the upper part with the other, the consequence being that, at the descent, the lower end of the pole will point upward, and the upper end downward. This should be practiced first in low leaps.

8. The descent depends entirely upon the manner in which the leap was made; if the leap be perfect, the descent will be so. The usual fault in descending is, that the leaper, having passed the cord, falls to the ground almost perpendicularly, instead of obliquely. In the annexed figure, *a* is the place whence the spring is made, *c* the section of the cord, *b* the position of the leaper over it, *d* his right, and *e* his wrong descent. The latter is faulty, because it throws him so much out of balance that, in order not to fall backward, he must run backward to *d*. If, on the contrary, he de-

scends in proper balance to the ground, he moves not an inch from the spot where his feet alight; and this complete rest following the descent is the sign of a perfect leap.

The descent, as already explained, must take place upon the balls of the toes, and with a sinking of the knees.

But many learn to swing the legs so well as to raise them, during the highest part of the leap, considerably above the head.

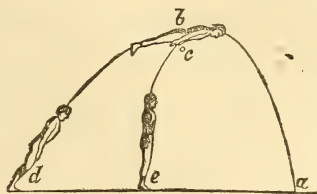
Order of exercises in the high leap, to be very gradually attempted:

1. The height of the hip.
2. That of the pit of the stomach.
3. That of the chin.
4. That of the crown of the head.
5. That of the points of the fingers; that is, as high as the latter can reach.

In performing these leaps, the pole is parted with. As many more may form a repetition of the preceding, with this difference, that the leaper carries the pole over with him. A similar number may repeat the first, except that the leaper, between the spring and descent, makes a complete turn round the pole, so as again to bring his face in the direction of the leap. This enlarged turn is rendered easier by leaping a little higher than the cord requires.

THE LONG LEAP WITH A POLE.—This leap is the most useful, being applicable almost every-where; and particularly in a country intersected with small rivers, ditches, etc. It should be first practiced over a ditch, about three feet deep, eight feet broad at one end, and about twenty-one feet at the other, and of any convenient length. In this exercise, the pole should be rather stronger and longer than in the preceding one, depending, however, on the length of the leap, and the height of the bank it is made from.

The handling of the pole is the same as in the high leap. The preparatory run is rapid, in proportion to the length of the leap. The spring takes place as in the preceding exercise. The swing is also the same, except that the curve of the leap is wider. The turning of the body may likewise be similar, but it is convenient to make only a quarter turn. In the descent the hand presses more upon the pole, and the feet are stretched out to reach the opposite bank, in which the leaper is descending. Another method



of leaping a river is to force the body up so high by the pressure of the hands (of which one rests upon the end of the pole, or very near it), as to swing over the top of the pole, and allow it to pass between the legs when descending. Try the following:

1. The leap of two lengths of the body.
2. That of three lengths of the body.
3. That of four lengths of the body.
4. Persons of equal strength try to outleap one another.

The lengths of 18, 22, and 24 feet are frequently done by practical leapers.

THE DEEP LEAP WITH A POLE.—Here neither the preparatory run nor the spring occur; there is nothing which requires the exertion of the lower members. The use of the hands and arms, however, is peculiarly requisite, as well as a little of the art of balancing. The leaper fixes the pole, at a convenient distance from the place where he stands, in a chasm, ditch, or river, having one bank high, and the opposite one low. Seizing it with both hands in the usual way, he slips along it lower and lower; the whole weight of his body at last resting upon it. Thus, if the depth is considerable, as two lengths of the body, he may slide so far down upon it that his head appears slanting downward. In this position, he makes a slight push against the bank, or merely quits it, with his feet, which he swings by the side of the pole to the opposite bank. Here, also, the descent is performed upon the balls of the toes, with bending of the knees. The principal advantage in this leap lies in the art of supporting the body, without tottering; and, for this purpose, it is absolutely necessary that the feet should be stretched out far from each other, in an angular form; otherwise the balance might be lost. The best way of practicing this, in an exercise ground, is by a flight of steps.

To the exercise of the abdominal members, these leaps unite a strong action of the muscles of the thorax, arms, and forearms, and even of those of the palms of the hand. The body is only half impelled by the abdominal members; but this impulse is rendered complete by considerable effort on the part of the thoracic members. The latter, in the vertical leap, being supported by the narrow and moveable base afforded by the pole, assist greatly in raising the body, and even keep it a moment suspended for the legs to pass over (if the object to be cleared is very high) before it allows the body to obey the force of gravity which carries it down.

This exercise communicates what is termed great lightness to the body, and great suppleness—that is to say, great relative strength of the abdominal members—and it also develops the superior members. It is good for lymphatic temperaments and young persons, but it should not be indulged in immediately after meals. It may occasion accidents of the brain and spinal marrow, unless all the articulations are bent on returning to the ground.

CLIMBING.

Climbing is the art of transporting the body in any direction, by the aid, in general, both of the hands and feet. The climbing-stand consists of two strong poles, about fifteen feet high, and from fifteen to twenty-five feet distant, which are firmly fixed in the ground, and support a beam strongly fastened to them. One pole is two inches and a half in diameter; the other, which serves as a mast, should be considerably thicker; and both serve the purpose of climbing. To the beam are attached other implements of climbing, viz.: a ladder, an inclined board, a mast, an inclined pole, a horizontal bar, a rope ladder, an upright, an inclined and a level rope.

KINDS OF CLIMBING.—Climbing on fixed bodies should first be practiced.

The Ladder.—Exercises on the ladder may be practiced in the following ways:

1. By ascending and descending as usual.
2. With one hand, carrying something in the other
3. Without using the hands.
4. Passing another on the front of the ladder, or swinging to the back, to let another pass.

The Inclined Board.—This should be rather rough, about two feet broad, and two inches thick. To climb it, it is necessary to seize both sides with the hands, and to place the feet flat in the middle, the inclination of the board being diminished with the progress of the pupil.

At first, it may form with the ground an angle of about thirty degrees; and the climber should not go more than half-way up. This angle may gradually be augmented to a right angle, or the direction of the board may be made perpendicular. When the board is thus little or not at all inclined, the body must be much

curved inward, and the legs thrust up, so that the higher one is nearly even with the hand. In descending, small and quick steps are necessary.

The Upright Pole.—The upright pole should be about two inches and a half in diameter, perfectly smooth and free from splinters.

The position of the climber is such as that nothing touches the pole except the feet, legs, knees, and hands. He grasps as high as possible with both hands, raises himself by bending the body and drawing his legs up the pole, holds fast by them, extends the body, again grasps higher up with his hands, and continues the same use of the legs and arms. The descent is performed by sliding down with the legs, and scarcely touching with the hands.

The Mast.—This is more difficult, as it can not be grasped with the hands, and it consequently should not be practiced until the climber is expert in the previous exercises. The position of the legs is the same as for the pole; but, instead of grasping the mast, the climber lays hold of his left arm with his right hand, or the reverse, and clings to the mast with the whole body.

The Slant Pole.—This must be at least three inches thick; and as, in this exercise, the hands bear more of the weight than in climbing the upright pole, it should not be attempted until expertness in the other is acquired.

The Horizontal, or Slightly Inclined Bar.—This may be about two inches wide at top, from ten to fifteen long, and supported by two posts, respectively six and seven feet high. The climber must grasp with both hands as high a part of the bar as he can reach, and, with arms extended, support his own weight as long as possible. He must next endeavor to bend the elbows so much that one shoulder remains close under the bar; or he may place both hands on the same side, and draw himself up so far as to see over it, keeping the legs and feet close and extended.

He may then hang with his hands fixed on both sides, near to each other, having the elbows much bent, the upper parts of the arms close to the body, and one shoulder close under the bar; may lower the head backward, and may, at the same time, raise the feet to touch each other over the bar. In the last position, he may move the hands one before the other, forward or backward, and may either slide the feet along the bar, or alternately change them like the hands, and retain a similar hold.

Hanging also by the hands alone, he moves them either forward or backward, keeping the arms firm, and the feet close and extended. Or he may place himself in front of the bar, hanging by both hands, and move laterally. Being likewise in front of the bar, with his hands resting upon it, he may move along the bar either to the right or left. In this position, the climber may endeavor to sit upon the bar, for instance, on the right side, by taking hold with the right knee-joint, grasping firmly with the right hand, and bringing the left armpit over the bar. The riding position is thus easily obtained. From the riding position, he may, by supporting himself with one thigh, turn toward the front of the bar, allowing the leg of the other side to hang down; and he may then very easily move along the bar sideways, by raising his body with his hands placed laterally on the bar.

The Rope Ladder.—This should have several rundles to spread it out, and ought, in all respects, to be so constructed as not to twist and entangle. The only difficulty here is, that, as it hangs perpendicularly, and is flexible, its steps are liable to be pushed forward, and in that case the body is thrown into an oblique position, and the whole weight falls on the hands. To prevent this, the climber must keep the body stretched out and upright.

The Upright Rope.—In this exercise, the securing the rope may be effected in various ways. In the first method, the hands and feet alone are employed. The feet are crossed; the rope passes between them, and is held fast by their pressure; the hands then grasp higher; the feet are drawn up, they are again applied to the rope, and the same process is repeated. In the second, which is the sailor's method, the rope passes from the hands, generally along the right thigh, just above the knee, winds round the inside of the thigh, under the knee-joint, over the outside of the leg, and across the instep, whence it hangs loose; and the climber, by treading with the left foot upon that part of the rope where it crosses the right one, is firmly supported. This mode of climbing requires the right leg and foot to be so managed that the rope keeps its proper winding whenever it is quitted by the left foot. In descending, to prevent injury, the hands must be lowered alternately.

To rest upon the upright rope, the climber must swing the right foot round the rope, so as to wind it three or four times round the leg, must turn it, by means of the left foot, once or twice round the right one, of which the toes are to be bent upward, and must tread

firmly with the left foot upon the last winding. Or, to obtain a more perfect rest, he may lower his hands along the rope, hold with the right hand, stoop, grasp with the left the part of the rope below the feet, raise it and himself again, and wind it round his shoulders, etc., until he is firmly supported.

The Oblique Rope.—The climber must fix himself to the rope, and advance the hands along it, as already directed. The feet may move along the rope alternately; or one leg, hanging over the rope, may slide along it; or, which is best, the sole of the foot may be laid upon the rope, and the other leg across its instep, so that the friction is not felt.

The Level Rope.—This may have its ends fastened to posts of equal heights, and the same exercises may be performed upon it.

Climbing Trees.—In attempting this exercise, the kind of wood and strength of the branches must be considered. Summer is the best time for practicing it, as withered branches are then most easily discerned; and even then it is best to climb low trees, until some experience is acquired. As the surface of branches is smooth, or moist and slippery, the hands must never for a moment be relaxed.

CHAPTER XII.

PHYSIOLOGY AND LAWS OF LIFE.

ON LIFE.

LIFE is a vortex, more or less rapid, more or less complicated, the direction of which is invariable, and which always carries along atoms or molecules of similar kinds, but into which individual molecules are continually entering, and from which they are continually departing; so that the *form* of a living body is more essential to it than its *matter*.

As long as this motion subsists—the body in which it takes place is living—*it lives*; when it finally ceases, *it dies*. After death, the elements which compose it, abandoned to the ordinary chemical affinities, soon separate, from which, more or less quickly, results the dissolution of the once living body. It was, then, by the vital motion that its dissolution was arrested, and its elements were held in a temporary union.

All living bodies die after a certain period, whose extreme limit is fixed for each species, and death appears to be a necessary consequence of life, which, by its own action, insensibly alters the structure of the body, so as to render its continuance impossible.

In fact, the living body undergoes gradual but continual changes during the whole term of its existence. At first it increases in dimensions, according to proportions, and within limits, fixed for each species and for each one of its parts; it then augments in density in the most of its parts. It is this second kind of change that appears to be the cause of natural death.

If we examine the various living bodies more closely, we find they possess a common structure, which a little reflection soon causes us to perceive is essential to a vortex such as the vital motion.

Solids, it is plain, are necessary to these bodies for the maintenance of their forms, and fluids for the conservation of motion in

them. Their tissue, accordingly, is composed of network and plates, or of fibers and solid laminæ, within whose interstices are contained the fluids; it is in these fluids that the motion is most continued and extended. Foreign substances penetrate the body and unite with them; they nourish the solids by the interposition of their molecules, and also detach from them those that are superfluous. It is in a liquid or gaseous form that the matters to be exhaled traverse the pores of the living body, but, in return, it is the solids which contain the fluids, and by their contraction communicate to them part of their motion.

This mutual action of the fluids and solids, this transition of molecules, required considerable affinity in their chemical composition; and such is the fact—the solids of organized bodies being mostly composed of elements easily convertible into fluids or gases.

The motion of the fluids needing also a constantly-repeated action on the part of the solids, and communicating one to them, required in the latter both flexibility and dilatibility, and, accordingly, we find this character nearly general in all organized solids.

This structure, common to all living bodies, this areolar tissue, whose more or less flexible fibers or laminæ intercept fluids more or less abundant, constitutes what is called the *organization*. As a consequence of what we have said, it follows that life can be enjoyed by organized bodies only.

Organization, then, results from a great variety of arrangements, which are all conditions of life; and it is easy to conceive that if its effects be to alter either of these conditions, so as to arrest even one of the partial motions of which it is composed, the general movement of life must cease.

Every organized body, independently of the qualities common to its tissue, has a form peculiar to itself, not merely general and external, but extending to the detail of the structure of each of its parts; and it is upon this form, which determines the particular direction of each of the partial movements that take place in it, that depends the complication of the general movement of its life; it constitutes its species and renders it what it is. Each part coöperates in this general movement by a peculiar action, and experiences from it particular effects, so that in every being life is a whole, resulting from the mutual action and reaction of all its parts.

Life, then, in general, presupposes organization in general, and

the life proper to each individual being presupposes an organization peculiar to that being, just as the movement of a clock presupposes the clock; and, accordingly, we behold life only in beings that are organized and formed to enjoy it, and all the efforts of philosophy have never been able to discover matter in the act of organization, neither *per se* nor by any external cause. In fact, life exercising upon the elements which at every moment form part of the living body, and upon those which it attracts to it, an action contrary to that which, without it, would be produced by the usual chemical affinities, it seems impossible that it can be produced by these affinities, and yet we know of no other power in nature capable of reuniting previously separated molecules.

The birth of organized beings is, therefore, the greatest mystery of the organic economy and of all nature; we see them developed, but never being formed. Nay, more: all those whose origin we can trace have at first been attached to a body similar in form to their own, but which was developed before them—in a word, to a *parent*. So long as the offspring has no independent existence, but participates in that of its parent, it is called a *germ*.

The place to which the germ is attached, and the cause which detaches it and gives it an independent life, vary; but this primitive adhesion to a similar being is a rule without exception. The separation of the germ is called *generation*.

Every organized being reproduces others that are similar to itself; otherwise, death being a necessary consequence of life, the species would become extinct.

Organized beings have even the faculty of reproducing, in degrees varying with the species, particular parts of which they may have been deprived; this is called the *power of reproduction*.

The development of organized beings is more or less rapid, and more or less extended, as circumstances are more or less favorable. Heat, the abundance and species of nutriment, with other causes, exercise great influence, and this influence may extend to the whole body in general, or to certain organs in particular; thence arises the impossibility of a perfect similitude between the offspring and parent.

Differences of this kind, between organized beings, form what are termed *varieties*.

There is no proof that all the differences which now distinguish organized beings are such as may have been produced by circum-

stances. All that has been advanced upon this subject is hypothetical. Experience, on the contrary, appears to prove that, in the actual state of the globe, varieties are confined within rather narrow limits; and, go back as far as we may, we still find those limits the same.

We are thus compelled to admit of certain forms which, from the origin of things, have perpetuated themselves without exceeding these limits, and every being appertaining to one or other of these forms constitutes what is termed a *species*. *Varieties* are accidental subdivisions of species.

Generation being the only means of ascertaining the limits to which varieties may extend, species should be defined, *the reunion of individuals descended one from the other, or from common parents, or from such as resemble them, as strongly as they resemble each other*. But, although this definition is strict, it will be seen that its application to particular individuals may be very difficult where the necessary experiments have not been made.

Thus, then, it stands—absorption, assimilation, exhalation, development, and generation are functions common to all living bodies; birth and death the universal limits of their existence; an areolar, contractile tissue, containing within its laminæ fluids or gases in motion, the general essence of its structure; substances almost all susceptible of conversion into fluids or gases, and combinations capable of an easy and mutual transformation, the basis of their chemical composition. Fixed forms that are perpetuated by generation distinguish their species, determine the complication of the secondary functions proper to each of them, and assign to them the parts they are to play on the great stage of the universe. These forms are neither produced nor changed by their own agency; life supposes their existence, its flame can only be kindled in an organization already prepared, and the most profound meditation and lynx-eyed and delicate observation can penetrate no further than the mystery of the preëxistence of germs.

Division of Organized Beings into Animals and Vegetables.—Living or organized beings have always been subdivided into *animate beings*—that is, such as are possessed of sense and motion—and into *inanimate beings*, which are deprived of both these faculties, and are reduced to the simple faculty of vegetating. Although the leaves of several plants shrink from the touch, and the roots

are steadily directed toward moisture, the leaves to light and air, and though parts of vegetables appear to oscillate without any apparent external cause, still these various notions have too little similarity to those of animals to enable us to find in them any proofs of perception or will.

The spontaneity in the motions of animals required essential modifications even in their purely vegetative organs. Their roots not penetrating the earth, it was necessary they should be able to place within themselves a supply of aliment, and to carry its reservoir along with them. Hence is derived the first character of animals, or their alimentary canal, from which their nutritive fluid penetrates all other parts through pores or vessels, which are a kind of internal roots.

The organization of this cavity and its appurtenances required varying, according to the nature of the aliment and the operation it had to undergo, before it could furnish juices fit for absorption, while the air and earth present to vegetables naught but elaborated juices ready for absorption.

The animal, whose functions are more numerous and varied than those of the plant, consequently necessitated an organization much more complete. Besides this, its parts not being capable of preserving one fixed relative position, there were no means by which external causes could produce the motion of their fluids, which required an exemption from atmospheric influence. From this originates the second character of animals, *their circulating system*, one less essential than that of digestion, since in the more simple animals it is unnecessary. The animal functions required organic systems not needed by vegetables—that of the muscles for voluntary motion, and nerves for sensibility; and these two systems, like the rest, acting only through the motions and transformations of the fluids, it was necessary that these should be most numerous in animals, and that the chemical composition of the animal body be more complex than that of the plant; and so it is, for one substance more (azote) enters into it as an essential element, while in plants it is a mere accidental junction with the three other general elements of organization, oxygen, hydrogen, and carbon. This, then, is the third character of animals.

From the sun and atmosphere vegetables receive for their nutrition water, which is composed of oxygen and hydrogen; air, which contains oxygen and azote; and carbonic acid, which is a

combination of oxygen and carbon. To extract their own composition from these aliments, it was necessary they should retain the hydrogen and carbon, exhale the superfluous oxygen, and absorb little or no azote. Such, in fact, is vegetable life, whose essential function is the exhalation of oxygen, which is effected through the agency of light.

Animals also derive nourishment, directly or indirectly, from the vegetable itself, in which hydrogen and carbon form the principal parts. To assimilate them to their own composition, they must get rid of the superabundant hydrogen and carbon in particular, and accumulate more azote, which is performed through the medium of respiration, by which the oxygen of the atmosphere combines with the hydrogen and carbon of their blood, and is exhaled with them in the form of water and carbonic acid. The azote, whatever part of the body it may penetrate, seems always to remain there.

The relations of vegetables and animals to the surrounding atmosphere are, therefore, in an inverse ratio; the former reject water and carbonic acid, while the latter produce them. The essential function of the animal body is respiration; it is that which, in a manner, animalizes it; and we shall see that the animal functions are the more completely exercised in proportion to the greatness of the powers of respiration possessed by the animal. This difference of relations constitutes the fourth character of animals.

Of the forms peculiar to the Organic Elements of the Animal Body, and of the principal combinations of its Chemical Elements.—An areolar tissue and three chemical elements are essential to every living body; there is a fourth element peculiarly requisite to that of an animal; but this tissue is composed of variously-formed meshes, and these elements are variously combined.

There are three kinds of organic materials or forms of texture—the *cellular membrane*, the *muscular fiber*, and the *medullary matter*—and to each form belongs a peculiar combination of chemical elements, as well as a particular function.

The *cellular substance* is composed of an affinity of small fibers and laminae, fortuitously disposed, so as to form little cells that communicate with each other. It is a kind of sponge, which has the same form as the body, all other parts of which traverse or fill it, and contracting indefinitely on the removal of the causes of its

tension. It is this power that retains the body in a given form and within certain limits.

When condensed, this substance forms those laminæ called *membranes*; the membranes, rolled into cylinders, form those more or less ramified tubes named *vessels*; the filaments, called *fibers*, are resolved into it, and bones are nothing but the same thing indurated by the accumulation of earthy particles.

The cellular substance consists of a combination well known as *gelatine*, characterized by its solubility in boiling water, and forming, when cold, a trembling jelly.

We have not yet been able to reduce the *medullary matter* to its organic molecules; to the naked eye, it appears like a sort of soft bouillie, consisting of excessively small globules; it is not susceptible of any apparent motion, but in it resides the admirable power of transmitting to the ME the impressions of the external senses, and conveying to the muscles the orders of the will. It constitutes the greater portion of the brain and the spinal marrow, and the nerves which are distributed to all the sentient organs are, essentially, mere fasciculi of its ramifications.

The *fleshy* or *muscular fiber* is a peculiar sort of filament, whose distinctive property, during life, is that of contracting when touched or struck, or when it experiences the action of the will through the medium of the nerve.

The muscles, direct organs of voluntary motion, are mere bundles of fleshy fibers. All vessels and membranes which have any kind of compression to execute are armed with these fibers. They are always intimately connected with nervous threads, but those which belong to the purely vegetative functions contract, without the knowledge of the ME, so that, although the will is truly a means of causing the fibers to act, it is neither general nor unique.

The fleshy fiber has for its base a particular substance called *fibrine*, which is insoluble in boiling water, and which seems naturally to assume this filamentous disposition.

The *nutritive fluid*, or *the blood*, such as we find it in the vessels of the circulation, is not only mostly resolvable into the general elements of the animal body—carbon, hydrogen, oxygen, and azote—but it also contains fibrine and gelatine almost prepared to contract and to assume the forms of membranes or filaments peculiar to them, all that is ever wanted for their manifestation being a little repose. The blood also contains another combination,

which is found in many animal fluids and solids, called *albumen*, whose characteristic property is that of coagulating in boiling water. Besides these, the blood contains almost every element which may enter into the composition of the body of each animal, such as the *lime* and *phosphorus* which harden the bones of vertebrated animals, the *iron* from which it and various other parts receive their color, the *fat* or animal oil which is deposited in the cellular substance to supple it, etc. All the fluids and solids of the animal body are composed of chemical elements found in the blood, and it is only by possessing a few elements, more or less, that each of them is distinguished, whence it is plain that their formation entirely depends on the subtraction of the whole or part of one or more elements of the blood, and, in some few cases, on the addition of some element from elsewhere.

These operations, by which the blood nourishes the fluid or solid matter of all parts of the body, may assume the general name of *secretions*. This name, however, is often appropriated exclusively to the production of liquids, while that of *nutrition* is more especially applied to the formation and deposition of the matter necessary to the growth and conservation of the solids.

The composition of every solid organ, of every fluid, is precisely such as fits it for the part it is to play, and it preserves it as long as health remains, because the blood renews it as fast as it becomes changed. The blood itself, by this continued contribution, is changed every moment, but is restored by digestion, which renews its matter by respiration, which delivers it from superfluous carbon and hydrogen, by perspiration and various other excretions, that relieve it from other superabundant principles. These perpetual changes of chemical composition form a part of the vital vortex, not less essential than the visible movements and those of translation. The object of the latter is, in fact, but to produce the former.

Of the forces which act in the Animal Body.—The muscular fiber is not only the organ of voluntary motion, for we have just seen that it is also the most powerful of the agents employed by nature to produce those transmutations so necessary to vegetative life. Thus the fibers of the intestines produce the peristaltic motion, which causes the alimentary matter therein contained to pass through them; the fibers of the heart and arteries are the agents of the circulation, and through it of all the secretions, etc.

Volition contracts the fiber through the medium of the nerve, and the involuntary fibers, such as those we have mentioned, being also animated by them, it is probable that these nerves are the cause of their contraction.

All contraction, and, generally speaking, every change of dimension in nature, is produced by a change of chemical composition, though it consist merely in the flowing or ebbing of an imponderable fluid, such as caloric; thus also are produced the most violent movements known upon earth, explosions, etc.

There is, consequently, good reason to suppose that the nerve acts upon the fiber through the medium of an imponderable fluid, and the more so as it is proved that this action is not mechanical.

The medullary matter of the whole nervous system is homogeneous, and must be able to exercise its peculiar functions wherever it is found; all its ramifications are abundantly supplied with blood-vessels.

All the animal fluids being drawn from the blood by secretion, we can have no doubt that such is the case with the nervous fluid, and that the medullary matter secretes it.

On the other hand, it is certain that the medullary matter is the sole conductor of the nervous fluid; all the other organic elements restrain and arrest it, as glass arrests electricity.

The external causes which are capable of producing sensations, or causing contractions of the fiber, are all chemical agents, capable of effecting decompositions, such as light, caloric, the salts, odorous vapors, percussion, compression, etc.

It would appear, then, that these causes act on the nervous fluid chemically, and by changing its composition; this appears the more likely, as their action becomes weakened by continuance, as if the nervous fluid needed the resumption of its primitive composition to fit it for a fresh alteration.

The external organs of the senses may be compared to sieves, which allow nothing to pass through to the nerve except that species of agent which should affect it in that particular place, but which often accumulates it so as to increase its effect. The tongue has its spongy papillæ, which imbibe saline solutions; the ear, a gelatinous pulp, which is violently agitated by sonorous vibrations; the eye, transparent lenses, which concentrate the rays of light, etc.

It is probable that what are styled irritants, or the agents which

occasion the contractions of the fiber, exert this action by producing on the fiber, by the nerve, a similar effect to that produced on it by the will; that is, by altering the nervous fluid in the way that is requisite to change the dimensions of the fiber which it influences; but with this process the will has nothing to do, and very often the ME is entirely ignorant of it. The muscles, separated from the body, preserve their susceptibility of irritation as long as the portion of the nerve that remains with them preserves the power of acting on them; with this phenomenon the will has evidently no connection.

The nervous fluid is altered by muscular irritation, as well as by sensibility and voluntary motion, and the same necessity exists for the reëstablishment of its primitive composition.

The transmutations necessary to vegetable life are occasioned by irritants; the aliment irritates the intestine, the blood irritates the heart, etc. These movements are all independent of the will, and generally (while in health) take place without the knowledge of the ME; in several parts, the nerves that produce them are even differently arranged from those that are appropriated to sensation or dependent on the will, and the very object of this difference appears to be the securing of this independence.

The nervous functions—that is, sensibility and muscular irritability—are so much the stronger at every point, in proportion as their exciting cause is abundant; and as this cause, or the nervous fluid, is produced by secretion, its abundance must be in proportion to the quantity of medullary or secretory matter, and the amount of blood received by the latter.

In animals that have a circulating system, the blood is propelled through the arteries which convey it to its destined parts, by means of their irritability and that of the heart. If these arteries be irritated, they act more strongly, and propel a greater quantity of blood; the nervous fluid becomes more abundant, and augments the local sensibility; this, in its turn, augments the irritability of the arteries, so that this mutual action may sometimes be carried to a great extent. It is called *orgasm*, and when it becomes painful and permanent, *inflammation*. The irritation may also originate in the nerve, when exposed to the influence of acute sensations.

This mutual influence of the nerves and fibers, either intestinal or arterial, is the real spring of vegetative life in animals.

As each external sense is permeable only by such or such sen-

sible substances, so each internal organ may be accessible only to this or that agent of irritation. Thus, mercury irritates the salivary glands, cantharides irritate the bladder, etc. These agents are called *specifics*.

The nervous system being homogeneous and continuous, local sensations and irritation debilitate the whole, and each function, by excessive action, may weaken the others. Excess of aliment weakens the power of thought, while long-continued meditation impairs that of the digestion, etc.

Excessive local irritation will enfeeble the whole body, as if all the powers of life were concentrated in one single point.

A second irritation produced at another part may diminish or divert, as it is termed, the first; such is the effect of blisters, purgatives, etc.

Brief as our sketch has been, it is sufficient to establish the possibility of accounting for all the phenomena of physical life, from the properties it presents, by the simple admission of a fluid such as we have defined.

Summary idea of the Functions and Organs of the Bodies of Animals, and of their various degrees of Complication.—After what we have stated respecting the organic elements of the body, its chemical principles and acting powers, nothing remains but to give a summary idea of the functions of which life is composed, and of their appropriate organs.

The functions of the animal body are divided into two classes:

The animal functions, or those proper to animals; that is to say, sensibility and voluntary motion.

The vital, vegetative functions, or those common to animals and vegetables; that is, nutrition and generation.

Sensibility resides in the nervous system.

The most general external sense is that of touch; it is seated in the skin, a membrane that envelopes the whole body, which is traversed in every direction by nerves whose extreme filaments expand on the surface into papillæ, and are protected by the epidermis and other insensible teguments, such as hairs, scales, etc. Taste and smell are merely delicate states of the sense of touch, for which the skin of the mouth and nostrils is particularly organized—the first by means of papillæ more convex and spongy, the second by its extreme delicacy and the multiplication of its ever

humid surface. We have already spoken of the ear and the eye. The organ of generation is endowed with a sixth sense, seated in its internal skin; that of the stomach and intestines declares the state of those viscera by peculiar sensations. In fine, sensations more or less painful may originate in every part of the body through accident or disease.

Many animals have neither ears nor nostrils, several are without eyes, and some are reduced to the single sense of touch, which is never absent.

The action received by the external organs is continued by the nerves to the central masses of the nervous system, which, in the higher animals, consists of the brain and spinal marrow. The more elevated the nature of the animal, the more voluminous is the brain, and the more is the sensitive power concentrated there; the lower the animal, the more the medullary masses are dispersed, and in the most imperfect genera the entire nervous substance seems to melt into the general matter of the body.

That part of the body which contains the brain and principal organs of sense is called the head.

When the animal has received a sensation, and this has occasioned volition, it is by the nerves, also, that this volition is transmitted to the muscles.

The muscles are bundles of fleshy fibers, whose contractions produce all the movements of the animal body. The extension of the limbs and every elongation, as well as every flexion and abbreviation of parts, are the effects of muscular contraction. The muscles of every animal are arranged, both as respects number and direction, according to the movements it has to make; and when these motions require force, the muscles are inserted into hard parts, articulated one over another, and may be considered as so many levers. These parts are called bones in the vertebrated animals, where they are internal, and are formed of a gelatinous mass, penetrated by particles of phosphate of lime. In the mollusca, the crustacea, and insects, where they are external, and composed of a calcareous or horny substance that exudes between the skin and epidermis, they are called shells, crusts, and scales.

The fleshy fibers are attached to the hard parts by means of other fibers of a gelatinous nature, which seem to be a continuation of the former, constituting what are called tendons.

The configuration of the articulating surfaces of the hard parts

limits their motion, which are also restrained by cords or envelopes, attached to the sides of the articulations, called ligaments.

It is from the various arrangements of this bony and muscular apparatus, and the form and proportion of the members therefrom resulting, that animals are capable of executing the innumerable movements that enter into walking and leaping, flight and natation.

The muscular fibers, appropriated to digestion and the circulation, are independent of the will; they receive nerves, however, but the chief of them are subdivided and arranged in a manner which seems to have for its object their independence of the ME.

It is only in paroxysms of the passions, and other powerful affections of the soul, which break down these barriers, that the empire of the ME is perceptible, and even then it is almost always to disorder these vegetative functions. It is, also, in a state of sickness only that these functions are accompanied with sensations; digestion is usually performed unconsciously.

The aliment divided by the jaws and teeth are sucked up when liquids constitute the food, is swallowed by the muscular movements of the hinder parts of the mouth and throat, and deposited in the first portions of the alimentary canal that is usually expanded into one or more stomachs; there it is penetrated with juices fitted to dissolve it. Passing thence through the rest of the canal, it receives other juices destined to complete its preparation. The parietes of the canal are pierced with pores which extract from this alimentary mass its nutritious portion; the useless residuum is rejected as excrement.

The canal in which this first act of nutrition is performed is a continuation of the skin, and is composed of similar layers; even the fibers that encircle it are analogous to those which adhere to the internal surface of the skin, called the fleshy pannicle. Throughout the whole interior of this canal there is a transudation which has some connection with the cutaneous perspiration, and which becomes more abundant when the latter is suppressed; the absorption of the skin is even very analogous to that of the intestines. It is in the lowest order of animals that the excrements are rejected by the mouth, their intestines resembling a sac, with but the one opening.

Even among those where the intestinal canal has two orifices, there are many in which the nutritive juices, being absorbed by the parietes of the intestine, are immediately diffused throughout the

whole spongy substance of the body ; such, it would appear, is the case with all insects. But from the arachnoides and worms upward, the nutritive fluid circulates in a system of closed vessels, whose ultimate ramifications alone dispense its molecules to the parts that are nourished by it ; the vessels that convey it are called *arteries* ; those that bring it back to the center of the circulation, *veins*. The circulating vortex is here simple, and there double and even triple (including that of the vena portæ) ; the rapidity of its motion is often assisted by the contractions of a certain fleshy apparatus called a *heart*, which is placed at one or the other centers of circulation, and sometimes at both of them.

In the red-blooded vertebrated animals, the nutritive fluid exudes from the intestines, white or transparent, and is then termed *chyle* ; it is poured into the veins, where it mingles with the blood, by two peculiar vessels called *lacteals*. Vessels similar to these lacteals, and forming with them an arrangement called the lymphatic system, also convey to the venous blood the residue of the nutrition of the parts and the products of cutaneous absorption.

Before the blood is fit to nourish the parts, it must experience from the circumambient element, the modification of which we have previously spoken. In animals possessing a circulating system, one portion of the vessels is destined to carry the blood into organs in which they spread it over a great surface to obtain an increase of this elemental influence. When that element is air, the surface is hollow, and is called *lungs* ; when it is water, it is salient, and is termed *branchiæ*. There is always an arrangement of the organs of motion for the purpose of propelling the element into, or upon, the organ of respiration.

In animals destitute of a circulating system, air is diffused through every part of the body by elastic vessels called *tracheæ* ; or water acts upon them, either by penetrating through vessels, or by simply bathing the surface of the skin. The respired or purified blood is properly qualified for restoring the composition of all the parts, and to effect what is properly called nutrition. This facility, which the blood possesses, of decomposing itself at every point, so as to leave there the precise kind of molecule necessary, is indeed wonderful ; but it is this wonder which constitutes the whole vegetative life. For the nourishment of the solids we see no other arrangement than a great subdivision of the extreme arterial ramifications, but for the production of fluids the

apparatus is more complex and various. Sometimes the extremities of the vessels simply spread themselves over large surfaces, whence the produced fluid exhales; at others it oozes from the bottom of little cavities. Before these arterial extremities change into veins, they most commonly give rise to particular vessels that convey this fluid, which appears to proceed from the exact point of union between the two kinds of vessels; in this case the blood-vessels and these latter form, by interlacing, particular bodies, called *conglomerate* or *secretory glands*.

In animals that have no circulation, in insects particularly, the parts are all bathed in the nutritive fluid; each of these parts draws from what it requires, and if the production of a liquid be necessary, proper vessels floating in the fluid take up by their pores the constituent elements of that liquid.

It is thus that the blood incessantly supports the composition of all the parts, and repairs the injuries arising from those changes which are the continual and necessary consequences of their functions. The general ideas we form with respect to this process are tolerably clear, although we have no distinct or detailed notion of what passes at each point, and, for want of knowing the chemical composition of each part with sufficient precision, we can not render an exact account of the transmutations necessary to effect it.

Besides the glands which separate from the blood those fluids that are destined for the internal economy, there are some which detach others from it that are to be totally ejected, either as superfluous—the urine, for instance, which is produced by the kidneys—or for some use to the animal, as the ink of the cuttlefish, and the purple matter of various mollusca, etc.

With respect to generation, there is a process or phenomenon, infinitely more difficult to comprehend than that of the secretions—the production of the germ. We have even seen that it is to be considered as almost incomprehensible; but the existence of the germ being admitted, generation presents no particular difficulties. As long as it adheres to the parent, it is nourished as if it were one of its organs, and when it detaches itself, it possesses its own life, which is essentially similar to that of the adult.

The germ, the embryo, the foetus, and the new-born animal have never, however, exactly the same form as the adult, and the difference is sometimes so great that their assimilation has been termed a *metamorphosis*. Thus, no one not previously aware of the fact

would suppose for a moment that the caterpillar is to become a butterfly.

Every living being is more or less metamorphosed in the course of its growth; that is, it loses certain parts, and develops others. The antennæ, wings, and all the parts of the butterfly were inclosed beneath the skin of the caterpillar; this skin vanishes along with the jaws, feet, and other organs that do not remain with the butterfly. The feet of the frog are inclosed by the skin of the tadpole; and the tadpole, to become a frog, parts with its tail, mouth, and branchiæ. The child, at birth, loses its placenta and membranes; at a certain period its thymus gland nearly disappears, and it gradually acquires hair, teeth, and beard; the relative size of its organs is altered, and its body augments in a greater ratio than its head, the head more than the internal ear, etc.

The place where these germs are found, and their germs themselves, are collectively styled the *ovary*; the canal through which, when detached, they are carried into the uterus, the *oviduct*; the cavity in which, in many species, they are compelled to remain for a longer or shorter period previous to birth, the *uterus*; and the external orifice through which they pass into the world, the *vulva*. Where there are sexes, the male impregnates, the germs appearing in the female. The fecundating liquor is called *semen*; the glands that separate it from the blood, *testes*; and when it is requisite it should be carried into the body of the female, the introductory organ is named a *penis*.

Of the Intellectual Functions of Animals.—The impression of external objects upon the ME, the production of a sensation or of an image, is a mystery into which the human understanding can not penetrate; and materialism a hypothesis, so much the more conjectural, as philosophy can furnish no direct proof of the actual existence of matter. The naturalist, however, should examine what appear to be the material conditions of sensation, trace the ulterior operations of the mind, ascertain to what point they reach in each being, and assure himself whether they are not subject to conditions of perfection, dependent on the organization of each species, or on the momentary state of each individual body.

To enable the ME to perceive, there must be an uninterrupted communication between the external sense and the central masses of the medullary system. It is, then, the modification only expe-

rienced by these masses that the ME perceives ; there may also be real sensations, without the external organ being effected, and which originate either in the nervous chain of communication, or in the central mass itself ; such are dreams and visions, or certain accidental sensations.

By central masses, we mean a part of the nervous system, that is so much the more circumscribed, as the animal is the more perfect. In man it consists exclusively of a limited portion of the brain ; but in reptiles it includes the brain and the whole of the medulla, and of each of their parts taken separately, so that the absence of the entire brain does not prevent sensation. In the inferior classes this extension is still greater.

The perception acquired by the ME produces the image of the sensation experienced. We trace to without the cause of that sensation, and thus acquire the *idea* of the object that has produced it. By a necessary law of our intelligence, all ideas of material objects are in time and space.

The modifications experienced by the medullary masses leave impressions there which are reproduced, and thus recall to the mind images and ideas ; this is *memory*, a corporeal faculty that varies greatly, according to the age and health of the animal.

Similar ideas, or such as have been acquired at the same time, recall each other ; this is the *association of ideas*. The order, extent, and quickness of this association constitute the perfection of memory.

Every object presents itself to the memory with all its qualities or with all its accessory ideas.

Intelligence has the power of separating these accessory ideas of objects, and of combining those that are alike in several different objects under a *general idea*, the object of which nowhere really exists nor presents itself *per se* ; this is *abstraction*.

Every sensation being more or less agreeable or disagreeable, experience and repeated essays soon show what movements are required to procure the one and avoid the other ; and, with respect to this, the intelligence abstracts itself from the general rules to direct the *will*.

An agreeable sensation being liable to consequences that are not so, and *vice versâ*, the subsequent sensations become associated with the idea of the primitive one, and modify the general rules framed by intelligence ; this is *prudence*.

From the application of these rules to general ideas result certain formulæ, which are afterward easily adapted to particular cases; this is called *reasoning*.

A lively remembrance of primitive and associated sensations, and of the impressions of pleasure or pain that belong to them, constitutes *imagination*.

One privileged being, MAN, has the faculty of associating his general ideas with particular images more or less arbitrary, easily impressed upon the memory, and which serve to recall the general ideas they represent. These associated images are styled *signs*; their assemblage is a language. When the language is composed of images that relate to the sense of hearing or of *sounds*, it is termed *speech*, and when relative to that of sight, *hieroglyphics*. *Writing* is a suite of images that relates to the sense of sight, by which we represent the elementary sounds, and, by combining them, all the images relative to the sense of hearing of which speech is composed; it is, therefore, only a mediate representation of ideas.

This faculty of representing general ideas by particular signs or images associated with them, enables us to retain distinctly, and to remember without embarrassment, an immense number; and furnishes to the reasoning faculty and the imagination innumerable materials, and to individuals means of communication, which cause the whole species to participate in the experience of each individual, so that no bounds seem to be placed to the acquisition of knowledge; it is the distinguishing character of human intelligence.

Although, with respect to the intellectual faculties, the most perfect animals are infinitely beneath man, it is certain that their intelligence performs operations of the same kind. They move in consequence of sensations received, are susceptible of durable affections, and acquire, by experience, a certain knowledge of things by which they are governed independently of actual pain or pleasure, and by the simple foresight of consequences. When domesticated, they feel their subordination, know that the being who punishes them may refrain from so doing if he will, and when sensible of having done wrong, or behold him angry, they assume a suppliant and deprecating air. In the society of man they become either corrupted or improved, and are susceptible of emulation and jealousy; they have among themselves a natural language, which,

it is true, is merely the expression of their momentary sensations, but man teaches them to understand another, much more complicated, by which he makes known to them his will, and causes them to execute it.

To sum up all, we perceive in the higher animals a certain degree of reason, with all its consequences, good and bad, and which appears to be about the same as that of children ere they have learned to speak. The lower we descend from man, the weaker these faculties become, and at the bottom of the scale we find them reduced to signs (at times equivocal) of sensibility; that is, to some few slight movements to escape from pain. Between these two extremes the degrees are infinite.

In a great number of animals, however, there exists another kind of intelligence, called *instinct*. This induces them to certain actions necessary to the preservation of the species, but very often altogether foreign to the apparent wants of the individual; often, also, very complicated, and which, if attributed to intelligence, would suppose a foresight and knowledge in the species that perform them infinitely superior to what can possibly be granted.

These actions, the result of instinct, are not the effect of imitation, for very frequently the individuals who execute them have never seen them performed by others; they are not proportioned to ordinary intelligence, but become more singular, more wise, more disinterested in proportion as the animals belong to less elevated classes, and in all the rest of their actions are more dull and stupid. They are so entirely the property of the species, that all its individuals perform them in the same way without ever improving them a particle.

The working bees, for instance, have always constructed very ingenious edifices, agreeably to the rules of the highest geometry, and destined to lodge and nourish a posterity not even their own. The solitary bee, and the wasp, also, form highly complicated nests in which to deposit their eggs. From this egg comes a worm which has never seen its parent, which is ignorant of the structure of the prison in which it is confined, but which, once metamorphosed, constructs another precisely similar.

The only method of obtaining a clear idea of instinct is by admitting the existence of innate and perpetual images or sensations in the sensorium, which cause the animal to act in the same way as ordinary or accidental sensations usually do. It is a kind of

perpetual vision, or dream, that always pursues it, and it may be considered, in all that has relation to its instinct, as a kind of somnambulism.

Instinct has been granted to animals as a supplement to intelligence, to concur with it, and with strength and fecundity, in the preservation, to a proper degree, of each species.

There is no visible mark of instinct in the conformation of the animal; but, as well as it can be ascertained, the intelligence is always in proportion to the relative size of the brain, and particularly of its hemispheres.

OF FOOD, AND THE DIGESTIVE PROCESS.

Sources for the Demand of Aliment—Hunger and Thirst.—In the first place, a due supply of food is required for the first development of the *germ* into the *adult fabric*. In all instances, the essential character of the act of reproduction appears to be the liberation or setting free of a cell-germ, which, according to the character of the being that gave origin to it, may be destined to evolve either a simple cell (as in the lowest cryptogamic plants), a congeries of cells, having a certain degree of variety of form and of difference of function (as in the higher classes of the vegetable kingdom), or a complex fabric, composed of an immense variety of parts, most of them departing widely, in appearance, at least, from the original cellular type, and destined to perform a vast variety of actions, as we see in the perfectly developed organism of the higher animals. The materials which are subservient to this evolution are all derived from the external world, either immediately or through the medium of the parent. The germs of the lowly cryptogamia are thrown at once upon the world, so to speak, to obtain their own livelihood, as mosses, for instance, and they themselves occasion the combination of the inorganic elements, which they there meet with, into the organic compounds, which are to be applied to the development of their simple organisms. In the flowering plants, on the other hand, the germ is at first supplied with a store of nutriment, which has already undergone this preparation, by the agency of the parent, and this store, laid up in the seed, is employed in the development of the fabric of the young plant until its organs are sufficiently evolved to enable it to perform the same processes for itself. The same plan is invariably followed in the

development of the animal, the nutriment stored up in the ovum, or egg, being usually sufficient for the evolution of the fabric until it acquires the power of ingesting food for itself; and where this is not the case (as in the mammalia), a further provision being adopted by which the supply is continued during a lengthened period. Even when thrown upon its own resources, the young animal is often far from having attained even the *form* of its parent, much less its *size*, and in the progress of its evolution, a greater or less degree of *metamorphosis*, or change of form, is observable. This is not usually so much the case in the higher animals as in the lower, because the supply of nutriment is proportionally greater in the former, and serves to carry on the development to a later period; but the changes of condition which their germinal structure undergoes within the ovum, are really as remarkable as those which are presented in the early embryos of the latter after their escape from the egg.

It is desirable to bear in mind that the function of the germ is simply that of *occasioning the combination* of the materials supplied by the external world, and of *directing the appropriation* of those materials. The several parts of the complex fabric of the higher animals contain a great variety of materials, and it is, therefore, requisite, for its development, that it should be duly supplied with all these. The demand set up by the fabric, while in course of development or evolution, for the materials of its growth, constitutes, therefore, the primary source of the requirement of food; and the nature of this must be adapted to the wants of the being. Thus, the fabric of plants is essentially composed of cellulose, a compound of oxygen, hydrogen, and carbon, and the materials required for the production of this are simply carbonic acid and water. But nearly all plants form some *azotized* compound in the interior of their cells, for the production of which ammonia also is required. And in those species which, like the cerealia, form a large quantity of azotized compounds, and store them up in their seeds, a free supply of ammonia is requisite for the production of the greatest proportion which they are capable of generating. In animals, again, whose tissue chiefly consists of these very azotized compounds, or of modifications of them, a constant supply of such is required during the whole period of the development of the fabric, as well as subsequently; and if they be not afforded in sufficient amount, the evolution of the organism is either retarded or checked

altogether. But there is one tissue, namely, fat, the peculiar characters of which are derived from the presence of a non-azotized substance in its cells; and this can not be developed unless there be in the food either oily, saccharine, or amylaceous matters, from any of which the fatty compounds may be generated.

The full development of the animal fabric, however, does not, by any means, involve the cessation of the demand for food; in fact, during the whole period of that development, it may be observed that the amount of nutriment ingested is far greater than that which is applied to the simple extension of the structure. One source of this constant demand is to be found in the continual *waste* or disintegration of the fabric, which goes on to a certain extent under all circumstances, but which varies in degree according to certain conditions not difficult to be understood. All organized substances are liable, from the peculiarity of their chemical composition, to decay; and this operates in the living as much as in the dead body. The difference is, that in the living fabric there is a provision for at once removing the products of decay, so that they may be cast out of the system as soon as possible, while in the dead body they remain and act as ferments, hastening the decomposition of other parts. Now, the amount of this decay varies with the temperature, being increased by warmth and retarded by cold. It is consequently greatest in warm-blooded animals, the temperature of whose bodies is constantly sustained at a high standard; it is reduced to its minimum in the torpid condition of cold-blooded animals, which is brought on by the agency of cold. There is another source of waste and decay which is common to animals, and all but the simplest plants; this results from the limited duration of life in the individual parts which are most actively concerned in the vegetative functions. We have seen that the essential instruments in the various functions of absorption, assimilation, respiration, secretion, and reproduction^s are *cells*, each of which goes through a certain series of processes, and then dies and decays, just as do the isolated cells which compose the entire fabric of the simplest plants. This is evidenced to us in the vegetable kingdom by the "fall of the leaf," which is nothing else than the result of the death and decay of the component cells of that organ, after having fulfilled their peculiar functions, these consisting in the preparation or elaboration of the nutritious sap, from which the various tissues and secretions of the plant are subsequently gener-

ated. The same process is continually taking place, though in a less obvious manner in the animal body, the rate of death and renewal of each group of cells being greater as the functions to which it ministers are energetically performed, while the energy of these operations is mainly dependent upon the demand set up by the exercise of the *animal* functions for the reparation of the nervous and muscular tissues.

The great source of *waste* and *decay* in the animal body, and consequently the chief source of the demand for food, is the separation of the nervous and muscular tissues, which has been shown to be a necessary condition of their functional activity. Every manifestation of nervous power, of whatever kind, seems to require the combination of oxygen with the elements of nervous matter, the normal composition of which is thus destroyed, so that it ceases to be fit to form part of the body, and is cast out by the various processes of excretion. The same is the case in regard to the muscular substance, the waste of which is conformable to the use made of it. The demand for the materials of reparation will follow the same proportion; and, as the preparation of these materials can only be effected by the agency of the vegetative or nutritive functions, the rate at which these are performed will be greatly influenced by the activity of the animal functions. Hence we see the necessity of regulating the supply of food in accordance with the state of the latter, since a diet which would be superfluous and injurious to an individual of inactive habits, is suitable and beneficial to one who is leading a life of continual exertion. This difference manifests itself remarkably in the contrast between animals of different tribes, whose natural instincts lead them to different modes of life. The birds of most active flight, and those animals which are required to put forth the greatest efforts to obtain their food, need the largest and most constant supplies of food; but even the least active of these classes stand in remarkable contrast with reptiles, whose slow and feeble movements are attended with so little waste that they can sustain life for weeks, and even months, with little or no diminution of their usual activity, without a fresh supply of food.

Finally, there is a most important cause of demand for food among the the higher animals, which does not exist either among the lower animals or in the vegetable kingdom, at least to any great degree. In the classes of mammals (animals which suckle

their young) and birds, and in that of insects, also, we find a capability of sustaining the heat of the body at a fixed standard, which is usually far above that of the surrounding medium. This they are enabled to do, as will be explained hereafter, by a process similar to ordinary combustion, the carbon and hydrogen, which are directly supplied by their food, or which have been employed for a time in the composition of their living tissues and then set free, being made to combine with oxygen introduced by the respiratory process, and thus giving out the same heat as if the same materials were burned in a furnace. It will be hereafter shown that the immediate cause of death in a warm-blooded animal, from which the food has been entirely withheld, is the inability any longer to sustain the temperature which is requisite for the performance of its vital operations. Hence we see the necessity for a constant supply of food, in the case of warm-blooded animals, for this purpose alone, and the demand will be regulated by the external temperature. When the heat is rapidly carried off from the surface by the chilling influence of the surrounding air or water, a much greater amount of carbon and hydrogen must be consumed within the body, to maintain its proper heat, than when the medium is nearly as warm as the body itself; so that a diet which is appropriate in the former circumstances is superfluous and injurious in the latter, and the food which is amply sufficient in a warm climate is utterly destitute of power to enable it to resist the influence of severe cold. Substances rich in carbon and hydrogen, and having little or no oxygen, afford the most efficient heat-sustaining materials; but it is an essential condition of their due action that they should be of a kind that renders them capable of being reduced by the solvent action of the stomach, and of being absorbed into the system.

The demand for food is increased by any cause which creates an unusual drain or waste in the system. Thus an extensive suppurating action can be sustained only by a large supply of highly nutritious food. The mother who has to furnish the daily supply of milk, which constitutes the sole support of her offspring, needs an unusual sustenance for this purpose. And there are states of the system, in which the solid tissues seem to possess an unusual tendency to decomposition, and in which an increased supply of food is therefore required. This is the case, for example, in diabetes, one of the first symptoms of which disease is the craving

appetite that seems as if it would be never satisfied. And there can be no doubt that, putting aside all the other circumstances which have been alluded to, there is much difference among individuals in regard to the rapidity of the changes which their organism undergoes, and the amount of food consequently required, for its maintenance.

The want of solid food is indicated by the sensation of hunger, and that of liquid by thirst. The former of these sensations is referred to the stomach, and the latter to the throat; but although certain conditions of these parts may be the immediate cause of the sensations in question, they are really indicative of the requirements of the system at large; for the intensity of the feelings bears no constant relation to the amount of solid or liquid food in the stomach, while, on the other hand, it does correspond with the excess of demand in the system over the supply afforded by the blood; and it is caused to abate by the introduction of the requisite materials into the circulating fluid, even though this be not accomplished in the usual manner by the ingestion of food into the stomach.

The sense of hunger, however, seems to be *immediately* dependent upon some condition of the stomach, and it may be temporarily alleviated by introducing into the digestive cavity matter which is not alimentary. Of the precise nature of that condition, however, we have no certain knowledge. It is easy to prove that many of the causes which have been assigned for the sensation are but little, if at all, concerned in producing it. Thus, mere emptiness of the stomach can not occasion it, since, if the previous meal have been ample, the food passes from its cavity sometime before a renewal of the uneasy feeling; and this emptiness may continue (in certain disordered states of the system) for many hours, or even days, without a return of desire for food. It can not be due, as some have supposed, to the action of the gastric fluid upon the coats of the stomach themselves, since this fluid is not poured into the stomach except when the production of it is stimulated by the irritation of the secreting follicles. By Dr. Beaumont it is thought that the distension of these follicles with the secreted fluid is the proximate cause of hunger, but there is no more reason to believe that the secretion of gastric fluid is accumulating during the intervals when it is not required, than there is in regard to saliva, the lachrymal fluid, or any other secretions, which are occasionally

poured out in large quantities under the influence of a particular stimulus; and, moreover, it is difficult to imagine how mental emotion, or any impression on the nervous system alone (which is able, as is well known, to dissipate the keenest appetite in a moment), can relieve such distension. It may, perhaps, be a more probable supposition that there is a certain condition of the capillary circulation in the stomach, which is preparatory to the secretion, and which is excited by the influence of the sympathetic nerves, that communicate, as it were, the wants of the general system. This condition may be easily imagined to be the proximate cause of the sensation of hunger. When food is introduced into the stomach, the act of secretion is directly excited, the capillary vessels are gradually unloaded, and the immediate cause of the impression on the par vagum is withdrawn. By the conversion of the alimentary matter into materials fit for the nutrition of the system, the remote demand also is satisfied; and thus it is that the condition of the stomach, just referred to, is permanently relieved by the introduction of substances that can serve as food. But if the food be not of a kind capable of solution and assimilation, the feeling of hunger is only temporarily relieved, and soon returns in greater force than before.

The sense of hunger, like other sensations, may not be taken cognizance of by the mind, if its attention be strongly directed toward other objects; of this fact almost every one engaged in active occupations, whether mental or bodily, is occasionally conscious. The nocturnal student, who takes a light and early evening meal, and, after devoting himself to his pursuits for several hours uninterruptedly, retires to rest with a wearied head and an empty stomach, but without the least sensation of hunger, is frequently prevented from sleeping by an indescribable feeling of restlessness and *deficiency*; and the introduction of a small quantity of food into the stomach will almost instantaneously allay this, and procure comfortable rest. Many persons, again, who desire to take active exercise before breakfast, are prevented from doing so by the lassitude, and even faintness, which it induces—the bodily exercise increasing the demand for food, while it draws off the attention from the sensation of hunger.

The conditions of the sense of thirst appear to be very similar to those of hunger. This sense is not referred, however, to the stomach, but to the fauces. It is generally considered that it

immediately results from an impression on the nerves of the stomach, since, if liquids are introduced into the stomach through an œsophagus-tube, they are just as effectual in allaying thirst as if they are swallowed in the ordinary manner. It may, however, be doubted whether the sense of thirst is not even more immediately connected with the state of the general system, than that of hunger; for the immediate relief afforded by the introduction of liquid into the stomach is fully accounted for by the instantaneous absorption of the fluid into the veins, which is known to take place when there is a demand for it, not only from Dr. Beaumont's observations, but from many experiments made with reference to this particular question. This demand is increased with almost equal rapidity, by an excess in the amount of the fluid excretions; and it may be satisfied without the introduction of water into the stomach. Thirst may also be produced, however, by the impression made by peculiar kinds of food or drink upon the walls of the alimentary canal; thus, salted or highly-spiced meat, fermented liquors, when too little diluted, and other similarly irritating agents, excite thirst, the purpose of which is obviously to cause ingestion of fluid, by which they may be diluted.

Nature and Destination of the Food of Animals.—The substances which are required by animals for the development and maintenance of their fabric are of two kinds, the organic and the inorganic. The former alone are commonly reckoned as aliments, but the latter are really not less requisite for the sustenance of the body, which speedily dies if the attempt be made to support it upon any organic compounds in a state of purity. In all ordinary articles of diet, however, the inorganic matters are present in the requisite proportion, and hence they have very commonly escaped notice. The nature of these substances, and the mode in which they are introduced into the body, will be considered hereafter. The organic matters used as food by animals are partly derived from the animal and partly from the vegetable kingdom, and they may be conveniently arranged under the four following heads: 1. The *saccharine* group, including all those substances derived from the vegetable kingdom which are similar in their composition to sugar, consisting of oxygen, hydrogen, and carbon alone, and having the two first present in the proportions to form water. To this group belong starch, gum, woody fiber, and the various tissues of plants,

which closely resemble each other in the proportion of their elements, and which may be converted into sugar by chemical processes of a simple kind. 2. The *oleaginous* group, including oily matters, whether derived from the vegetable kingdom or from the fatty portions of animal bodies. The characteristic of this class is the great predominance of hydrogen and carbon, the small proportion of oxygen, and the entire absence of nitrogen. 3. The *albuminous* group, comprising all those substances, whether derived from the animal or vegetable kingdom, which are closely allied to albumen, and, therefore, to the majority of the animal tissues in their chemical composition. In this group a large proportion of azote is united with the oxygen, hydrogen, and carbon of the preceding. 4. The *gelatinous* group, consisting of substances derived from animal bodies only, which are closely allied to gelatine in their composition. These also contain azote, but the proportion of their components differs from that of the preceding.

The compounds of the *saccharine* group can not, without undergoing a change, form part of any animal tissue, as there is none which they resemble in composition. It will be shown, however, that they are convertible, within the animal body, into those of the *oleaginous* group, and, like them, may be deposited in the form of adipose or fatty matter. There is no other tissue in the body into which they can enter without considerable change, for all others are *azotized*, and it seems extremely improbable that non-azotized compounds can, under any circumstances, be converted within the body into compounds of the albuminous or gelatinous groups.

The application of the substances forming the *albuminous* group, to the support of the animal body, by affording the materials for the nutrition and reformation of its tissues, needs little explanation. The proportions of the four ingredients of which they are all composed are so nearly the same, that no essential difference appears to exist among them, and it is a matter of little consequence, except as far as the gratification of the palate is concerned, whether we feed upon the flesh of animals (fibrine), upon the white of egg (albumen), the curd of milk (caseine), the grain of wheat (gluten), or the seed of the pea (legumen). All these substances are reduced in the stomach to the form of *albumen*, which resembles the *gum* of plants, in being the raw material, as it were, out of which the various fabrics of the body are constructed. But the rule holds good with regard to these also, that by being made to feed con-

stantly on the same substance—boiled white of egg, for instance, or meat deprived of the principle (osmazome) that gives it flavor—an animal may be effectually starved, its disgust of the food being such that, even if it be swallowed, it is not digested. It is very interesting to remark that, in the only instance in which nature has provided a *single* article of food for the support of the animal body, she has mingled articles from the three first of the preceding groups. This is the case in *milk*, which contains a considerable quantity of an albuminous substance, *caseine*, which forms its curd, a good deal of *oily* matter, the butter, and no inconsiderable amount of *sugar*, which is dissolved in the whey. The proportions of these vary in different mammalia, and they depend in part upon the nature of the food supplied to the animal that forms the milk, but the substances are thus combined in every instance. Although the greater part of the organized tissue of animals is formed at the expense of the albumen and fibrine of their blood, yet many of them also contain a large quantity of *gelatine*. It seems certain that this *gelatine* may be produced out of fibrine and albumen, since in animals that are supported on these alone, the nutrition of the gelatinous tissues does not seem to be impaired. But it also appears that *gelatine* taken in as food may be applied to this purpose, for ordinary experience shows that benefit is derived from jelly, soup, broth, etc., peculiarly by persons who have been suffering under exhausting diseases, such as fevers. But it also appears certain that it can not be applied to the nutrition of the albuminous tissues. Some important experiments have been recently made in Paris on this subject, with a view of determining how far the soup made from crushed bones—which constituted a principal article of diet in the hospitals of Paris—was adequate for the support of the patients. The result of these has been quite confirmatory of previous conclusions; namely, that *gelatine* may be advantageously mixed with albumen, fibrine, gluten, etc., and those other ingredients which exist in meat-soup and bread; but that, when taken alone, it has little more power of sustaining life than sugar or starch possesses, and that, even when bread is united with *gelatine* soup, it does not give it the requisite power of nutrition.

If the *non-azotized* compounds which exist so largely in the food of herbivorous animals be not destined to form part (in any considerable degree at least) of their tissues, the question arises, What

becomes of them? It is not enough to say that they are deposited as fat, since it is only when a large quantity of them is taken in that there is any increase in the quantity of fat already in the body. We shall hereafter see that they are used up in the process of respiration, being burned off within the body for the purpose of keeping up its temperature. The process will be hereafter considered more in detail, and at present we need only stop to remark upon the adaptation between the food provided for animals in different climates, and the amount of heat which it is necessary for them to produce. Thus the bears, and seals, and whales, from which the Esquimaux and the Greenlander derive their support, have an enormous quantity of fat in their massive bodies. This fat is as much esteemed as an article of food among these people as it would be thought repulsive by the inhabitants of southern climates; and by the large quantity of it they consume, they are able to support the bitterness of an Arctic winter without appearing to suffer more from the extreme cold than do the residents in more temperate climates during *their* winter. On the other hand, the antelopes, deer, and wild cattle, which form a large proportion of the animal food of savage or half-cultivated nations inhabiting temperate or tropical regions, possess very little fat; and the comparatively small supply of carbon and hydrogen, whose combustion is required to keep up the bodily temperature of the inhabitants of those regions, is derived from the *flesh* of those animals in the manner that will be presently explained. Every one knows how much less vigorous the appetite becomes during the heat of summer than it is during the colder portion of the year; and this is a natural result of the diminished demand for the fuel required to maintain the temperature. And one great means of preserving the health, during a prolonged residence in a hot climate, is to attend to the dictates of nature in regard to the quantity of food taken, instead of endeavoring (as is the prevalent practice) to stimulate the appetite by artificial provocatives, stomach bitters, and the like.

The maintenance of the bodily temperature in *carnivorous* or flesh-eating animals appears to depend upon the combustion of the carbon and hydrogen set free by the disintegration of their nervous and muscular tissues, this disintegration taking place with much more rapidity, in consequence of their almost unceasing activity, than it does in the herbivorous animals, which lead comparatively inactive lives. Every one who has visited a menagerie must have

noticed the continual restlessness of the tigers, leopards, hyenas, etc., which keep pacing from one end of their narrow cages to the other; and it would seem as if this restlessness were a natural instinct, impelling them to use muscular exertion sufficient for the metamorphosis of an adequate amount of tissue, that enough carbon and hydrogen may be set free for the support of the respiratory process. And we see a corresponding activity in the human hunters of the swift-footed antelope and agile deer, which answers a similar purpose, and which is remarkably contrasted with the stupid inertness of the inhabitants of the frigid zone, which is only occasionally interrupted by the necessity of securing the supplies of food afforded by the massive tenants of their seas. The nutrition of the carnivorous races may, then, be thus described: the bodies of the animals upon which they feed contain flesh, fat, etc., in nearly the same proportion as their own, and all, or nearly all, the aliment they consume goes to supply the waste in the fabric of their own bodies, being converted into its various forms of tissue. After having remained in this condition for a certain time, varying according to the use that is made of them, these tissues undergo another change, which ends in restoring them to inorganic matter, and thus give back to the mineral world the materials which were drawn off from it by plants. Of these materials, part are burned off, as it were, within the body, by union with the oxygen of the air taken in through the lungs, and are discharged from these organs in the form of carbonic acid and water; the remainder are carried off in the liquid form by other channels. Hence, we may briefly express the destination of their food in the following manner:

Food consisting of albumen, fibrine, and other azotized compounds	} convert- ed into	{ living organized tissue.	} and this metamor- phosed into	{ carbonic acid and water thrown off by respiration. Urea and biliary matter, etc., thrown off by other excretions.

But in regard to the *herbivorous* or herb-eating animals the case is different. They perspire much more abundantly, and their temperature is thus continually kept down. They consequently require a more active combustion to develop sufficient bodily heat; and the materials for this are supplied, as we have seen, by the non-azotized portions of their food, rather than by the metamorphosis of their own tissues, which takes place with much less rapidity than in the canivorous tribes. Hence we may thus express the destination of this part of their food; that of the azotized mat-

ter, here much smaller in amount, will be the same as in the preceding case :

Starch, oil, and other non-azotized compounds	} partly converted into	{ adipose tissue	} but chiefly thrown off directly as	{ carbonic acid and water, dis- engaged by the respiratory process.
---	-------------------------------	---------------------	--	---

The proportion of the food deposited as fat will depend, in part, upon the surplus which remains after the necessary supply of materials has been afforded to the respiratory process. Hence, the same quantity of food being taken, the quantity of fat will be increased by causes that check the perspiration, and otherwise prevent the temperature of the body from being lowered, so that there is need of less combustion within the body to keep up its heat. This is consistent with the teachings of experience respecting the fattening of cattle; for it is well known that this may be accomplished much sooner if the animals are shut up in a warm dwelling and covered with cloths than if they are freely exposed in the open air.

Now, the condition of man may be regarded as intermediate between these two extremes. The construction of his digestive apparatus, as well as his own instinctive propensities, point to a mixed diet as that which is best suited to his wants. It does not appear that a diet composed of *ordinary* vegetables only is favorable to the full development of either his bodily or mental powers; but this can not be said in regard to a diet of which *bread* is the chief ingredient, since the gluten it contains appears to be as well adapted for the nutrition of the animal tissues, as does the flesh of animals. On the other hand, a diet composed of animal flesh alone is the least economical that can be conceived; for, since the greatest demand for food is created in him (taking a man of average habits, in regard to activity and the climate he inhabits), by the necessity for a supply of carbon and hydrogen to support his respiration, this want may be most advantageously fulfilled by the employment of a certain quantity of non-azotized food in which these ingredients predominate. Thus, it has been calculated that, since fifteen pounds of flesh contain no more carbon than four pounds of starch, a savage with one carcass, and an equal weight of starch, could support life for the same length of time, during which another restricted to animal food would require five such carcasses in order to procure the carbon necessary for respiration. Hence, we see the immense advantage as to economy of food which a fixed agricultural population possesses over those wandering tribes of hunters

which still people a large part both of the old and new continents. The mixture of the azotized and non-azotized compounds (gluten and starch) that exists in wheat flour, seems to be just that which is most useful to man; and hence we see the explanation of the fact that, from very early ages, bread has been regarded as the "staff of life." In regard to the nutritious properties of different articles of vegetable food, these may be generally estimated by the proportion of azote they contain, which is, in almost every instance, less than that existing in good wheat flour.

There are certain mineral ingredients which may be said to constitute part of the food of animals, being necessary to *their* support in the same manner as other mineral substances are necessary to the support of plants. Of this kind are common salt, and also phosphorus, sulphur, and lime, either in combination or separate. The uses of *salt* are very numerous and important. It consists of two substances of opposite qualities, muriatic acid and soda; and the former is the essential ingredient in the gastric juice, while the latter performs a very important part in the production of bile. *Phosphorus* is chiefly required to be united with fatty matter, to serve as the material of the nervous tissue, and to be combined with oxygen and lime, to form the bone-earth, by which the bone is consolidated. *Sulphur* exists in small quantities in several animal tissues; but its part is by no means so important as that performed by phosphorus. *Lime* is required for the consolidation of the bones. To these ingredients we may also add *iron*, which is a very important element in the red blood of animals. These substances are contained more or less abundantly in most articles generally used as food; and where they are deficient the animal suffers in consequence, if they are not supplied in any other way. Thus, common *salt* exists in no inconsiderable quantity in the flesh and fluids of animals, in milk, and in the egg; it is not so abundant, however, in plants, and the deficiency is usually supplied to herbivorous animals by some other means. Thus salt is purposely mingled with the food of domesticated animals; and in most parts of the world inhabited by wild cattle, there are spots where it exists in the soil, and to which they resort to obtain it. Such are the "buffalo licks" of this country. *Phosphorus* exists also in the yolk and white of the egg, and in milk, the substances on which the young animal subsists during the period of its most rapid growth; and it abounds not only in many animal substances used

as food, but also (in the state of phosphate of lime or bone-earth) in the seeds of many plants, especially the grasses. In smaller quantities it is found in the ashes of almost every plant. When flesh, bread, fruit, and husks of grain are used as the chief articles of food, more phosphorus is taken into the body than it requires, and the excess has to be carried out in the excretions. *Sulphur* is derived alike from vegetable and animal substances. It exists in flesh, eggs, and milk; also in the azotized compounds of plants, and (in the form of sulphate of lime) in most of the river and spring-water that we drink. *Iron* is found in the yolk of egg, and in milk, as well as in animal flesh; it also exists, in small quantities, in most vegetable substances used as food by man, such as potatoes, cabbage, peas, cucumbers, mustard, etc., and probably in most articles from which other animals derive their support. *Lime* is one of the most universally diffused of all mineral bodies; for there are very few animal or vegetable substances in which it does not exist. It is most commonly taken in among the higher animals combined with phosphoric acid, and in this state it exists largely in the seeds of most grasses, especially in wheat flour. If it were not for their deficiency in phosphate of lime, some of the leguminous seeds would be more nutritious than wheaten flour, the proportion of azotized matter they contain being greater. A considerable quantity of lime exists, in the state of carbonate and sulphate, in all hard water.

The *absolute quantity* of food required for the maintenance of the human body in health varies so much with the age, sex, and constitution of the individual, and with the circumstances in which he may be placed, that it would be absurd to attempt to fix any standard which should apply to every particular case. The appetite is the only sure guide for the supply of the wants of each, but its indications must not be misinterpreted. To eat when we are hungry is an evidently natural disposition; but to eat as long as we are hungry may not always be prudent. Since the feeling of hunger does not depend so much upon the state of fullness or emptiness of the stomach, as upon the condition of the general system, it appears evident that the eating of food can not *at once* produce the effect of dissipating it, though it will do so after a short time; so that, if we eat with undue rapidity, we may continue swallowing food long after we have taken as much as will really be required for the wants of the system; and every superfluous particle is not

merely useless, but injurious. Hence, besides its other important ends, the process of thorough mastication is important, as prolonging the meal, and giving time to the system to become acquainted, as it were, that the supply of its wants is in progress, so that its demand may be abated in due time to prevent the ingestion of more than is required. It is very justly remarked, by Dr. Beaumont, that the cessation of this demand, rather than the positive sense of satiety, is the proper guide. "There appears to be a sense of perfect intelligence conveyed to the encephalic (pertaining to the head) center which, in health, invariably dictates what quantity of aliment (responding to the sense of hunger and its due satisfaction) is naturally required for the purposes of life, and which, if noticed and properly attended to, would prove the most salutary monitor of health and effectual preventive of disease. It is not the sense of satiety, for this is beyond the point of healthful indulgence, and is nature's earliest indication of an abuse and overburden of her powers to replenish the system. It occurs immediately previous to this, and may be known by the pleasurable sensations of perfect satisfaction, ease, and quiescence of body and mind. It is when the stomach says *enough*; and it is distinguished from satiety by the difference of sensations, the latter saying *too much*." Every medical man is well aware how generally this rule is transgressed, some persons making a regular practice of eating to repletion, and others paying far too little attention to the preliminary operations, and thus ingesting more than is good for them, even though they may actually leave off with an appetite.

Although no universal law can be laid down for individuals, however, it is a matter of much practical importance to be able to form a correct *average* estimate. It is from the experience afforded by the usual consumption of food by large bodies of men that our data are obtained; and these data are sufficient to enable us to predict, with tolerable accuracy, what will be required by similar aggregations, though they can afford no guide to the consumption of individuals. We shall first consider the quantity sufficient for men in regular active exercise, and then inquire how far that may be safely reduced for those who lead a more sedentary life. The diet-scale of the British navy may be advantageously taken as a specimen of what is required for the first class. It is well known that an extraordinary improvement has taken place in the health of seamen during the last eighty years, so that three ships can now

be kept afloat with only the same number of men which were formerly required for two. This is due to the improvement in the quality of the food in combination with other prophylactic means. At present it may safely be affirmed that it would not be easy to conceive of any diet-scale more adapted to answer the required purpose. The health of crews that have been long afloat, and have been exposed to every variety of external conditions, appears to be preserved (at least when they are under the direction of judicious officers) to the full, as well as that of persons subject to similar vicissitudes on shore; and there can be no complaint of insufficiency of food, although the allowance can not be regarded as superfluous. It consists of from 31 to 35½ oz. of *dry* nutritious matter daily; of this 26 oz. are vegetable, and the rest animal; 9 oz. of salt meat, or 4½ oz. fresh, being the allowance of the latter. This is found to be amply sufficient for the support of strength; and considerable variety is produced by exchanging various parts of the diet for other articles. This, however, is sometimes done erroneously; thus, 8 oz. of fresh vegetables, which contain only 1½ oz. of solid nutriment, are exchanged for 12 oz. of flour, which is almost all nutritious. Sugar and cocoa are also allowed, partly in exchange for a portion of the spirits formerly served out, the diminution of which, especially in the case of boys, has been attended with great benefit.

A considerable reduction in this amount is, of course, admissible where little bodily exertion is required, and where there is less exposure to low temperatures.

It is a curious effect of insufficient nutriment, as shown by the recent inquiries of Chossat, that it produces an incapability of digesting even the limited amount supplied. He found that when turtle-doves were supplied with limited quantities of corn, but with water at discretion, the whole amount of food taken was scarcely ever actually digested, a part of it being rejected by vomiting, or passing off by diarrhea, or accumulating in the crops. It seems as if the vital powers were not sufficient to furnish the requisite supply of gastric fluid, when the body began to be enfeebled by insufficient nutrition, or perhaps, we might well say, the materials of the gastric fluid were wanting. Hence, the loathing of food, which is often manifested by those who have been subjected to the influence of an insufficient diet-scale in our prisons and poor-houses, and which has been set down to caprice or obstinacy, and punished

accordingly, may be actually a proof of the deficiency of the supply which we might expect to have been voraciously devoured, if really less than the wants of the system require.

The smallest quantity of food upon which life is known to have been supported with vigor, during a prolonged period, is that on which Cornaro states himself to have subsisted. This was no more than 12 oz. a day, chiefly of vegetable matter, for a period of fifty-eight years. There is only one instance on record in which his plan was followed; and there are probably few who could long persevere in it, at least among those whose avocations require much mental or bodily exertion. It is certain, however, that life with a moderate amount of vigor may be preserved for some time with a very limited amount of food; this appears from the records of shipwreck and similar disasters. In regard, however, to those who have been stated to fast for a period of months or even years, taking no nutriment, but maintaining an active condition, it may be safely asserted that they were impostors, probably possessing unusual powers of abstinence, which they took care to magnify. The instances in which the life of man, or of other mammalia, has been prolonged to the greatest extent without water, are those in which, from the peculiarity of the circumstances, the cutaneous exhalation must have been reduced to a very small amount, or in which there may have been an actual absorption of water by the skin and lungs. Thus, Fodéré mentions that some workmen were extricated alive, after fourteen days' confinement in a cold damp cavern, in which they had been buried under a ruin. And there is a well-known case of a hog, which was buried in its sty for 160 days, under thirty feet of chalk of dover cliff, and was dug out alive at the end of that time, reduced in weight from 160 lbs. to 40 lbs.; here the temperature would be kept up by the non-conducting power of the chalk around, and the air surrounding the animal would soon become sufficiently charged with fluid to resist further evaporation. The time during which life can be supported under total abstinence is usually stated to vary from eight to ten days; the period may be greatly prolonged, however, by the occasional use of water, and still more by a very small supply of food. In a case recorded by Dr. Willan of a young gentleman who starved himself under the influence of a religious delusion, life was prolonged for sixty days, during the whole of which time nothing else was taken than a little orange-juice. In a somewhat similar case,

which occurred under the author's notice, in the person of a young French lady, more than fifteen days elapsed between the time that she ceased to eat regularly and the time of her being compelled to take nourishment; during this period she took a great deal of exercise, and her strength seemed to suffer but little, although she swallowed solid food only once, and then in small quantity. If the cessation of muscular exertion be complete, it seems that life is usually more prolonged than where exercise of any kind is performed; and this is what might naturally be expected. In certain states of the system commonly known as *hysterical*, there is frequently a very remarkable disposition for abstinence, and power of sustaining it. In a case of this kind, which occurred under the author's own notice, a young lady, who had suffered severely from the tetanic form of hysteria, was unable to take food for three weeks. The slightest attempt to introduce a morsel of solid matter into the stomach occasioned very severe vomiting and retching; and the only nourishment taken during the period mentioned was a cup of tea once or twice a day, on many days not even this being swallowed. Yet the strength of the patient rather increased than diminished during this period; her muscles became firmer, and her voice more powerful. It may be well to remark that, under such circumstances, the continual persuasions of anxious friends are very injurious to the patient, whose return to her usual state will probably take place the earlier the more completely she is left to herself.

Of the quantity which *can* be devoured at a time, it is scarcely the place to speak, since such feats of gluttony only demonstrate the extraordinary capacity which the stomach may be made to attain by continual practice. Many amusing instances are related by Captain Parry, in his Arctic Voyages; in one case, a young Esquimaux, to whom he had given (for the sake of curiosity) his full tether, devoured in four and twenty hours no less than 35 lbs. of various kinds of aliment, including tallow candles. A case has recently been published of a Hindoo who can eat a whole sheep at a time; this probably surpasses any other instance on record. The half-breed *voyageurs* of Canada, according to Captain Franklin, and the wandering Cossacs of Siberia, as testified by Captain Cochrane, habitually devour a quantity of animal food which would be soon fatal to any one unused to it. The former are spoken of as very discontented when put on a short allowance of 8 lbs. of

meat a day, their usual consumption being from 12 to 20 lbs. That a much larger quantity of food than that formerly specified may be taken with perfect freedom from injurious consequences, under a particular system of exercise, etc., appears from the experience of those who are *trained* for feats of strength, pugilistic encounters, etc. The ordinary belief that the athletic constitution can not be long maintained appears to have no real foundation, nor does it appear that any ultimate injury results from the system being persevered in for some time. That trained men often fall into bad health, on the cessation of the plan, is probably owing in part to the intemperance and other bad habits of persons of the class usually subjected to this discipline. The effects of trainers' regimen are hardness and firmness of the muscles, clearness of the skin, capability of bearing continued severe exercise, and a feeling of freedom and lightness (or "corkiness") in the limbs. During the continuance of the system it is found that the body recovers with wonderful facility from the effects of injuries; wounds heal very rapidly; cutaneous eruptions usually disappear. Clearness and vigor of mind, also, are stated to be the results of this plan; and it is probable that, where persevering attention and intense application are necessary, a modification of this system, in which due allowance should be made for the diminished quantity of exercise, would be found advantageous.

Of the Passage of Food along the Alimentary Canal.—The introduction of alimentary matter into the system is accomplished in animals by the reception of the food into an internal cavity where it is subjected to a preparatory process to which nothing analogous exists in plants, and which is termed digestion. This process may be said to have three different purposes in view: the reduction of the alimentary matter to a fluid form, so that it may become capable of absorption; the separation of that portion of it which is fit to be assimilated or converted into organized texture from that which can not serve this purpose, and which is at once rejected; and the alteration (when required) of the chemical constitution of the former, which prepares it for the important changes it is subsequently to undergo. The simplest conditions requisite for the accomplishment of these purposes are the following: A fluid capable of performing the solution and of effecting the required chemical changes; a fluid capable of separating the unorganizable mat-

ter by a process analogous to chemical precipitation ; and a cavity or sac in which these operations may be performed.

Mastication and Deglutition.—The first step in the process of reduction is the mastication of the food, and the impregnation of its pulverized particles with the salivary secretion. Mastication is evidently of great importance in preparing the substances to be afterward operated on for the action of their solvent. The complete separation in parts of the alimentary matter, therefore, is of great consequence, and, if imperfectly effected, the subsequent processes are liable to derangement. This derangement we continually meet with ; for there is not, perhaps, a more frequent source of dyspepsia than imperfect mastication, whether resulting from the haste with which the food is swallowed, or from the want of the proper instruments. The disintegration of the food by mechanical reduction is manifestly aided by insalivation ; and the admixture of saliva appears further to have the effect of commencing the transformation of the starchy particles into sugar. From recent experiments it would seem that saliva, if acidulated, possesses the same power of acting on azotized compounds as that which characterizes the gastric juice, and, consequently, when introduced into the stomach, the saliva may afford important aid in the digestive process. When the reduction of the food in the mouth has been sufficiently accomplished it is carried into the œsophagus by the action of deglutition. The share which the nervous system has in this action has been already stated, and it here only remains to define more precisely the different movements which are concerned in it. The *first* stage in the process is the carrying back of the food until it has passed the anterior palatine arch ; this, which is effected by the approximation of the tongue and the palate, is a purely voluntary movement. In the *second* stage the tongue is carried still further backward, and the larynx is drawn forward under its root, so that the epiglottis is depressed down over the rima glottidis. The muscles of the anterior palatine arch contract after the morsel has passed it, and assist its passage backward ; these, with the tongue, cut off completely the communication between the fauces and the mouth. At the same time, the muscles of the posterior palatine arch contract in such a manner as to cause the sides of the arch to approach each other like a pair of curtains, so that the passage from the fauces into the posterior nares is nearly closed by them ; and to the cleft between the approximated sides

the uvula is applied like a valve. A sort of inclined plane, directed obliquely downward and backward, is thus formed, and the morsel slides along it into the pharynx, which is brought up to receive it. Some of these acts may be performed voluntarily, but the combination of the whole is automatic. The *third* stage of the process, the propulsion of the food down the œsophagus, then commences. This is accomplished in the upper part by means of the constrictors of the pharynx, and in the lower by the muscular coat of the œsophagus itself. When the morsels are small, and are mixed with much fluid, the undulating movements from above downward succeed each other very rapidly; this may be well observed in horses while drinking; large morsels, however, are frequently some time in making their way down. Each portion of food and drink is included in the contractile walls, which are closely applied to it during the whole of its transit. The whole of the third stage is completely involuntary. At the point where the œsophagus enters the stomach—the cardiac orifice of the latter—there is a sort of sphincter, which is usually closed. This opens when there is a sufficient pressure on it made by accumulated food, and afterward closes so as to retain the food in the stomach. The opening of the cardiac is one of the first acts which takes place in vomiting.

Action of the Stomach.—A remarkable opportunity of ascertaining the condition of the stomach during digestion presented itself some time since, in a case in which a large fistulous aperture remained after a wound that laid open the cavity, but in which the general health was completely recovered, so that the process may be considered as having been nominally performed. “The inner coat of the stomach, in its natural and healthy state, is of a light or pale pink color, varying in its hues, according to its full or empty state. It is of a soft or velvet-like appearance, and is constantly covered with a very thin, transparent, viscid mucus, lining the whole interior of the organ. By applying aliment or other irritants to the internal coat of the stomach, and observing the effect through a magnifying glass, innumerable lucid points and very fine nervous or vascular papillæ can be seen arising from the villous membrane, and protruding through the mucous coat, from which distills a pure, limpid, colorless, slightly viscid fluid. The fluid thus excited is invariably distinctly acid. The mucus of the stomach is less fluid, more viscid or albuminous, semi-opaque, sometimes a little saltish, and does not possess the slightest char-

acter of acidity. The gastric fluid never appears to be accumulated in the cavity of the stomach while fasting, and is seldom, if ever, discharged from its proper secerning vessels, except when excited by the natural stimulus of aliment, mechanical irritation of tubes, or other excitants. When aliment is received the juice is given out in exact proportion to its requirements for solution, except when more food has been taken than is necessary for the wants of the system." That the quantity of the gastric juice secreted from the walls of the stomach depends rather upon the general requirements of the system than upon the quantity of food introduced into the digestive cavity, is a principle of the highest practical importance, and can not be too steadily kept in view in dietetics. A *definite proportion* only of aliment can be perfectly digested in a given quantity of the fluid, the action of which, like that of other chemical operations, ceases after having been exercised on a fixed and definite amount of matter. "When the juice has become saturated it refuses to dissolve more; and, if an excess of food has been taken, the residue remains in the stomach, or passes into the bowels in a crude state, and becomes a source of nervous irritation, pain and disease, for a long time." The unfavorable effect of an undue burden of food upon the stomach itself, interferes with its healthy action, and thus the quantity really appropriate is not dissolved. The febrile disturbance is thus increased, and the mucous membrane of the stomach exhibits evident indications of its morbid condition. The description of these indications, given by Dr. Beaumont, is peculiarly graphic, as well as hygienically important.

"In disease, or partial derangement of the healthy function, the mucous membrane presents various and essentially-different appearances. In febrile conditions of the system, occasioned by whatever cause—obstructed perspiration, undue excitement by stimulating liquors, overloading the stomach with food, fear, anger, or whatever depresses or disturbs the nervous system—the villous coat becomes sometimes red and dry, at other times pale and moist, and loses its smooth and healthy appearance; the secretions become vitiated, greatly diminished, or even suppressed; the coat of mucus scarcely perceptible, the follicles flat and flaccid, with secretions insufficient to prevent the papillæ from irritation. There are sometimes found, on the internal coat of the stomach, eruptions of deep-red pimples, not numerous, but distributed here and

there upon the villous membrane, rising above the surface of the mucous coat. These are at first sharp-pointed and red, but frequently become filled with white purulent matter. At other times irregular circumscribed red patches, varying in size and extent from half an inch to an inch and a half in circumference, are found on the internal coat. These appear to be the effects of congestion in the minute blood-vessels of the stomach. There are also seen at times small aphthous crusts in connection with these red patches. Abrasion of the lining membrane, like the rolling up of the mucous coat into small shreds or strings, leaving the papillæ bare for an indefinite space, is not an uncommon appearance. These diseased appearances, when very slight, do not always affect essentially the gastric apparatus. When considerable, and particularly when there are corresponding symptoms of disease—as dryness of the mouth, thirst, accelerated pulse, etc.—*no gastric juice can be extracted by the alimentary stimulus*. Drinks are immediately absorbed or otherwise disposed of; but food taken in this condition of the stomach remains undigested for twenty-four or forty-eight hours, or more, increasing the derangement of the alimentary canal, and aggravating the general symptoms of disease. After excessive eating or drinking chymification is retarded, and, though the appetite be not always impaired at first, the fluids become acrid and sharp, excoriating the edges of the aperture, and almost invariably producing aphthous patches and the other indications of a diseased state of the internal membrane. Vitiating bile is also found in the stomach under these circumstances, and flocculi of mucus are more abundant than in health. Whenever this morbid condition of the stomach occurs, with the usual accompanying symptoms of disease, there is generally a corresponding appearance of the tongue. When a healthy state of the stomach is restored, the tongue invariably becomes clean.”

The food which is propelled along the œsophagus enters the stomach through its cardiac orifice in successive waves, and it is immediately subjected to a peculiar peristaltic movement, which has for its object to produce the thorough intermixture of the gastric fluid with the alimentary mass, and also to aid the solution of the latter by the gentle trituration to which it is thus subjected. The fasciculi composing the muscular wall of the human stomach are so disposed as to shorten its diameter in every direction, and by the alternate contraction and relaxation of these bands a great

variety of motion is induced in this organ, sometimes transversely, and at other times longitudinally. "These motions," Dr. Beaumont remarks, "not only produce a constant disturbance or *churning* of the contents of the stomach, but they compel them, at the same time, to revolve about the interior from point to point, and from one extremity to the other." In addition to these movements, there is a constant agitation of the stomach, produced by the respiratory muscles. The motions of the stomach itself are not performed on any very exact plan, and are much influenced by the character of the food, the state of the general system, and by other circumstances. These motions continue until the stomach is perfectly empty, and not a particle of food or chyme remains. Of the degree in which they are dependent upon the influence of the nervous system some idea has been already given; there is yet much to be learned, however, especially in regard to the degree in which the movements may be checked or altered by impressions transmitted through the nervous system. It is stated by Brachet that, in some of his experiments upon the par vagum some hours after section of the nerve on both sides, the surface only of the alimentary mass was found to have undergone solution, the remainder of the mass remaining in the condition in which it was first ingested; and if this statement can be relied on, it would appear that the movements of the stomach, like those of the heart, can be readily affected by a strong nervous impression. It may be partly in this manner, therefore, and not by acting upon the secretions alone, that strong emotions influence the digestive process as they are well known to do. On the other hand, the moderate excitement of pleasurable emotions may be favorable to the operation, not only by giving firmness and regularity to the action of the heart, and thence promoting the circulation of the blood and the increase of the gastric secretion, but also in impairing firmness and regularity to the muscular contractions of the stomach.

Action of the Intestinal Tube.—The pulpy substance to which the food is reduced, by the mechanical reduction and chemical solution it has undergone in the mouth and stomach, is termed *chyme*. The consistence of this will, of course, vary in some degree with the quantity of fluid taken in; in general it is greyish, semifluid, and homogeneous, and possesses a slightly acid taste, but is otherwise insipid. Dr. Beaumont describes it as varying in its aspect—

from that of cream, which it presents when the food has been of a rich character, to that of gruel, which it possesses when the diet has been farinaceous. The passage of the chyme through the pyloric orifice is at first slow; but when the digestive process is nearly completed, it is transmitted in much larger quantities. From the time that the ingested matter enters the intestinal canal, it is propelled by the simple peristaltic action of its muscular coat, which is directly excited by the contact either of this matter or of the secretions which are mingled with it, and all that is not absorbed is thus conducted to the rectum, its expulsion from which is due to an action of a distinctly reflex kind, excited through the nervous centers. During its progress through the intestinal tube, the product of the gastric operation undergoes very important changes. The chyme is mingled in the duodenum with the biliary and pancreatic secretions, which effect an immediate alteration both in its sensible and chemical properties. The nature of this alteration can be best estimated by mingling bile with chyme removed from the body. This has been done by several experimenters on the lower animals, and by Dr. Beaumont, in the case already referred to, which afforded him the means of obtaining not only chyme but bile and pancreatic fluid. The effect of this admixture was to separate the chyme into three distinct parts, a reddish brown sediment at the bottom, a whey-colored fluid in the center, and a creamy pellicle at the top. The central portion, with the creamy pellicle, seems to constitute the *chyle* absorbed by the lacteals, the creamy matter being chiefly composed of oily particles, and the wheyey fluid having proteine-compounds, saccharine and saline matters, in solution; the sediment partly consisting of the insoluble portion of the food, and partly of the biliary matter itself, is evidently excrementitious.

By the gradual withdrawal of their fluid portion, the contents of the alimentary canal are converted into a mass of greater consistence, and this, as it advances through the small intestines, assumes more and more of a fæcal character. A part of the fæces, however, may be derived from the secretions of the enteritic mucous membrane, and of its glandulæ; the surface of the former, with its simple follicles, probably secretes nothing else than mucus; but the *glandulæ*, with which it is so thickly studded, appear to serve as the channel for the elimination of putrescent matter from the blood. There can be no doubt that a large quantity of fluid

is poured out by these glandulæ when they are in a state of irritation from disease or from the stimulus of a purgative medicine, since the amount of water discharged from the bowels is often much greater than that which has been taken in, and must be derived from the blood.

Nature of Chymification and Chylification.—The causes of the reduction of the food in the stomach have long been a fruitful source of discussion among physiologists, and various hypotheses have been devised to account for it. Some have compared the stomach of man to the gizzard of a fowl, and have supposed that the *trituration* or grinding of the food between its walls was the essential element in the process; but this doctrine is completely incompatible with the fact that digestible substances, inclosed in metallic balls with perforations in their sides, are still dissolved by the power of the gastric fluid, though the walls of the stomach do not come in contact with them. Others, again, have imagined that the process of digestion is one of *putrefaction*; but this idea, putting aside its inherent absurdity, is proved to be incorrect by the fact that the gastric juice has a decidedly antiseptic quality. Others, in despair of obtaining any other solution, have attributed the operation to the direct agency of the *vital principle*, forgetting that, as long as the food remains within the stomach and intestinal canal, it can no more be the subject of any peculiarly vital process than if it were in contact with the skin, of which the mucous membrane is but an internal reflection. The theory of *chemical solution*, which was at first regarded by many as quite untenable, has been of late years so much strengthened by new facts and arguments, that there now appears no valid reason for withholding our assent from it, even though it can not yet give a complete explanation of the complex phenomena in question. The chief opposition to this theory has arisen from the difficulty of imagining that any simply chemical solvent should have the power of acting on so great a variety of substances and of reducing them to a state so homogeneous. This difficulty, however, seems now in a great degree removed, by the discovery of the close chemical relation that subsists between the various substances of each of the groups already enumerated, which renders it easy to conceive that the changes involved in their reduction may be of a very simple character.

The first series of facts which will be here adduced, as throwing

light on the process of chymification, is that which has been obtained by the experiments of Dr. Beaumont upon Alexis St. Martin. By introducing a tube of India-rubber into the empty stomach, he was able to obtain a supply of gastric juice whenever he desired it; for the tube served the purpose of stimulating the follicles to pour forth their secretion, and, at the same time, conveyed it away. This fluid, of which the existence has been denied by some physiologists, is not very unlike saliva in its appearance; it is, however, distinctly acid to the taste, and chemical analysis shows that it contains a considerable proportion of free muriatic acid, and also some acetic acid. The former must evidently be derived from the decomposition of the muriate of soda contained in the blood, the remote source of which is the salt taken with the food. The latter is an organic compound, probably formed at the expense of some of the saccharine matter of the previous aliment. Of equal importance with the free acids, is an animal matter, soluble in cold water, but insoluble in hot, bearing considerable resemblance to albumen. Of this more will be said hereafter. Besides these principal ingredients, the gastric fluid contains muriates and phosphates of potass, soda, magnesia, and lime. It possesses the power of coagulating albumen in an eminent degree; it is powerfully antiseptic, checking the putrefaction of meat; and it is effectually restorative of healthy action when applied to old fetid sores and foul ulcerating surfaces. It may be kept for many months, if excluded from the air, without becoming fetid.

The gastric juice obtained from the stomach was found by Dr. Beaumont to possess the power of dissolving various kinds of alimentary substances, when these were submitted to its action at a constant temperature of 100° (which is about that of the stomach), and were frequently agitated. The solution appeared to be, in all respects, as perfect as that which naturally takes place in the stomach, but required a longer time. This is readily accounted for when we remember that no ordinary agitation can produce the same effect with the curious movements of the stomach, and that the continual removal from its cavity of the matter which has been already dissolved must aid the operation of the solvent on the remainder. The following is one out of many experiments detailed by Dr. Beaumont. "At half-past eleven o'clock A. M., after having kept the lad fasting for seventeen hours, I introduced a gum-elastic tube, and drew off one ounce of pure gastric liquor, unmixed

with any other matter, except a small proportion of mucus, into a three-ounce phial. I then took a solid piece of boiled recently-salted beef, weighing three drachms, and put into the liquor in the phial; corked the phial tight, and placed it in a saucepan filled with water, raised to the temperature of 100°, and kept at that point on a nicely-regulated sand-bath. In *forty* minutes digestion had distinctly commenced over the surface of the meat. In *fifty* minutes the fluid had become quite opaque and cloudy; the external texture began to separate and become loose. In *sixty* minutes chyme began to form. At one o'clock P. M., (digestion having progressed with the same regularity as in the last half hour,) the cellular texture seemed to be entirely destroyed, leaving the muscular fibers loose and unconnected, floating about in fine small shreds, very tender and soft. At three o'clock the muscular fibers had diminished one half, since the last examination. At five o'clock they were nearly all digested, a few fibers only remaining. At seven o'clock the muscular texture was completely broken down, and only a few of the small fibers could be seen floating in the fluid. At nine o'clock every part of the meat was completely digested. The gastric juice, when taken from the stomach, was as clear and transparent as water. The mixture in the phial was now about the color of whey. After standing at rest a few minutes, a fine sediment, of the color of the meat, subsided to the bottom of the phial. A piece of beef, exactly similar to that placed in the phial, was introduced into the stomach, through the aperture, at the same time. At twelve o'clock it was withdrawn and found to be as little affected by digestion as that in the phial; there was little or no difference in their appearance. It was returned to the stomach, and, on the string being drawn out, at one o'clock P. M., the meat was found to be all completely digested and gone. The effect of the gastric juice on the piece of meat suspended in the stomach was exactly similar to that in the phial, only more rapid after the first half hour, and sooner completed. Digestion commenced on, and was confined to, the surface entirely in both situations. Agitation accelerated the solution in the phial by removing the coat that was digested on the surface, enveloping the remainder of the meat in the gastric fluid, and giving this fluid access to the undigested portions." Many variations were made in other experiments, some of which strikingly displayed the effects of thorough mastication in aiding both natural and artificial digestion.

The attempt was made by Dr. Beaumont to determine the relative digestibility of different articles of diet, by observing the length of time requisite for their solution. But, as he himself points out, the rapidity of digestion varies so greatly, according to the quantity eaten, the nature and amount of the previous exercise, the interval since the preceding meal, the state of health, the condition of the mind, and the nature of the weather, that a much more extended inquiry would be necessary to arrive at results to be depended on. Some important inferences of a general character, however, may be drawn from his inquiries. It seems to be a general rule that the flesh of wild animals is more easy of digestion than that of the domesticated races which approach them most nearly. This may, perhaps, be partly attributed to the small quantity of fatty matter that is mixed up with the flesh of the former, while that of the latter is largely pervaded by it; for it appears, from Dr. Beaumont's experiments, that the presence in the stomach of any substance which is difficult of digestion interferes with the solution of food that would otherwise be soon reduced. It seems that, on the whole, beef is more speedily reduced than mutton, and mutton sooner than either veal or pork. Fowls are far from possessing the digestibility that is ordinarily imputed to them; but turkey is, of all kinds of flesh, except venison, the most soluble. Dr. Beaumont's experiments further show that *bulk* is as necessary for healthy digestion as the presence of the nutrient principle itself. This fact has been long known by experience to uncivilized nations. The Kamschatdales, for example, are in the habit of mixing earth or sawdust with the train-oil, on which alone they are frequently reduced to live. The Veddahs, or wild hunters of Ceylon, on the same principle, mingled the pounded fibers of soft and decayed wood with honey, on which they feed when meat is not to be had; and on one of them being asked the reason of the practice, he replied, "I can not tell you, but I know that the belly must be filled." It is further shown by Dr. Beaumont that soups and fluid diet are not more readily chymified than solid food, and are not alone fit for the support of the system; and this, also, is conformable to the well-known results of experience; for a dyspeptic patient will frequently reject chicken-broth when he can retain solid food or a richer soup. Perhaps, as Dr. A. Combe remarks, the little support gained from fluid diet is due to the rapid absorption of the watery part of it, so that the really nutritious

portion is left in too soft and concentrated a state to excite the healthy action of the stomach. Dr. Beaumont also ascertained that moderate exercise facilitates digestion, though severe and fatiguing exercise retards it. If even moderate exercise be taken *immediately* after a *full* meal, however, it is probably rather injurious than beneficial; but if an hour be permitted to elapse, or if the quantity of food taken have been small, it is of decided benefit. The influence of temperature on the process of solution is remarkably shown in some of Dr. Beaumont's experiments. He found that the gastric juice had scarcely any influence on the food submitted to it, when the bottle was exposed to the cold air, instead of being kept at a temperature of 100°. He observed, on one occasion, that the injection of a single gill of water at 50° into the stomach sufficed to lower its temperature upward of 30°, and that its natural heat was not restored for more than half an hour. Hence, the practice of eating ice after dinner, or even of drinking largely of cold fluids, is very prejudicial to digestion.

From the foregoing statements, we may conclude that the process by which the food is dissolved in the gastric fluid is of a purely chemical nature, since it takes place out of the living body as well as in it, allowance being made for the difference in its physical condition. That the natural process of digestion is imitated when the food is submitted to the action of the gastric juice in a phial, not only in regard to the disintegration of its particles, but as to the change of character which they are made to undergo, is proved by the fact that the artificial chyme thus formed exhibits the same changes as the real chyme when submitted to the action of the bile. The process of digestion, however, may be freely conceded to be vital, in so far as it is dependent upon the agency of a secreted product, which vitality alone (so far at least as we at present know) can elaborate; and all for which it is here contended is, that, when this product is once formed, it has an agency upon the alimentary matter, which, though not yet fully understood, is conformable in all that is known of its operation to the ordinary laws of chemistry. Thus, digestion is conformable to chemical solution, *first*, in the assistance which both derive from the minute division of the solids submitted to it; *secondly*, in the assistance which both derive from the successive addition of small portions of the comminuted solid to the solvent fluid, and from the thorough intermixture of the two by continual agitation; *thirdly*, in the limitation of the quantity

of food on which a given amount of gastric juice can operate, which is precisely the case with chemical solvents; *fourthly*, in the assistance which both derive from an elevation of temperature, the beneficial influence of heat being only limited, in the case of digestion, by its tendency to produce decomposition of the gastric fluid; *fifthly*, in the different action of the same solvent upon the various solids submitted to it.

We have, in the last place, to consider the changes which are effected in the nutritive materials by the admixture of the biliary and pancreatic secretions, and to inquire into the form in which they are received into the absorbent vessels. The substances of the first or *saccharine* group consist chiefly of sugar and starch. It appears, from the late researches of MM. Bouchardat and Sandras, that sugar is gradually converted, during its passage along the alimentary canal, into lactic acid; and that it is absorbed in this form alone, unless it have been administered in considerable quantity or for a long period. The conversion of sugar into lactic acid, appears to be preliminary to the elimination of that substance by the respiratory process. The particles of starch, as already mentioned, are but very little acted on by the digestive process, at least in man and the mammalia, unless their envelopes have been previously ruptured by heat or chemical agents; but the triturating power of the gizzard in granivorous birds, aided by the high temperature and the more alkaline character of the secretions, enables them to act with more energy upon amylaceous substances. The products of the digestive action upon starch are dextrine and grape-sugar, and this is gradually converted into lactic acid, in which state it is absorbed. If sugar be introduced into the blood-vessels unchanged, it is drawn off by the urine, and its heat-sustaining agency, therefore, is not exerted. It is probably to avoid its too rapid introduction that the conversion of amylaceous into saccharine matter is so slowly effected in the alimentary canal; this conversion seems to begin in the mouth, to cease in the stomach during the operation of the acid solvent, and to recommence after the neutralization of the acid by the biliary and pancreatic fluids, subsequently continuing during nearly the whole of the passage of the alimentary matter along the intestinal tube. It is now quite certain that the substances of this class may be converted, in the living body, into oleaginous matter. Of the mode and the situation in which this conversion takes place, nothing

whatever is certainly known, but a clue to an acquaintance with the former seems to be given by the recently-discovered fact that the continued contact of bile with saccharine matter occasions the conversion of a portion of the sugar into an adipose compound.

The substances forming the oily *oleaginous* class do not seem to undergo any change, except minute division of their particles, until the chyme is mingled with bile, which substance acts as a soap, and renders the oily matters soluble, or at any rate reduces them to a condition in which they can be absorbed by the lacteals. This, indeed, seems to be the main purpose of that admixture of the bile with the mass in process of digestion, which experiments and pathological observation abundantly prove to be requisite for the due performance of that function. Thus, it has been shown, by the experiments of Schwann, that if the bile duct be divided, and be made to discharge its contents externally through a fistulous orifice in the walls of the abdomen, instead of into the intestinal canal, those animals which survive the immediate effects of the operation subsequently die from inanition, almost as soon as if they had been entirely deprived of food. In like manner, if the flow of the biliary secretion into the intestine be prevented by disease—such as obstruction of the gall duct—the digestive function is evidently disordered, the peristaltic action of the intestine is not duly performed, the fæces are white and clayey, and there is an obvious insufficiency in the supply of nutriment prepared for the absorbent vessels. This deficiency seems partly due to the want of power to absorb the oleaginous particles of the food, which is the result of the non-intermixture of the bile with the chyme, and partly to the suspension of the supply of combustible matter that is afforded by certain constituents of the bile itself, which are destined not to be carried out of the system, but to be reabsorbed. The presence of bile in the stomach has the effect of suspending the solution of the various azotized principles, and in regard to them, therefore, it is injurious; but it seems, from the observations of Dr. Beaumont, to be a spontaneous occurrence, whenever the diet has been for a long time, and in great part, of an oleaginous nature; and it then appears destined to aid in the producing process, which is the proper function of the stomach. It is suggested, by Dr. A. Combe, whether the peculiar digestibility of a piece of fat bacon, in certain forms of dyspepsia, may not be due to the abnormal presence of bile in the stomach. The power of precipitating the proteine com-

pounds from their acid solutions, which has been shown, by the recent experiments of Platner, to belong to the peculiar principles of bile, fully explains its injurious effects upon the solvent processes which normally take place in the stomach. In regard to the *albuminous* and *gelatinous* articles of food, there is no evidence that any other change is effected in them than one of simple solution; and they appear to be absorbed in the same condition as that to which they are reduced by the action of the stomach.

GLOSSARY

OF

MEDICAL AND SCIENTIFIC TERMS.

- ABRADED**—Having the skin rubbed off.
- ABSORBENT**—That which absorbs, or soaks up.
- ABDOMEN**—The belly.
- ACARUS**—An itch insect.
- ACESCENT**—Disposed to acidity.
- ACIDULATED**—Rendered slightly acid or sour.
- ACRID**—Of a hot, biting taste when taken internally, or causing heat and irritation of skin if applied outwardly.
- AD LIBITUM**—To an indefinite extent.
- AERATED**—Purified by fresh air.
- AFFUSION**—The pouring of liquid on a body.
- ALBUMEN**—A sample is found in the white of an egg.
- ALIMENT**—Food.
- ALLUVIUM**—The matter left after a freshet has subsided.
- ALKALINE**—Deprived of carbonic acid.
- ALTERATIVES**—Medicines supposed to bring about a salutary change in a disease.
- ALVINE**—Relating to the lower belly.
- AMYLACEOUS**—Having the nature of starch.
- ANÆSTHESIA**—Loss of feeling.
- ANASARCA**—Dropsy of the cellular membrane.
- ANIMALCULE**—A very small animal.
- ANODYNES**—Medicines which relieve pain.
- ANTACIDS**—Remedies which remove acidity of the stomach.
- ANTHELMINTICS**—Remedies for worms.
- ANTIDOTES**—Medicines which act against poisons.
- ANTISCORBUTIC**—Opposed to scurvy.
- APOPLECTIC**—Disposed to or having the character of apoplexy.

- APATHY—Accidental suspension of the moral feelings.
APERIENT—A medicine which acts on the bowels gently.
AREOLA—The colored circle surrounding the nipple.
AROMATICS—Medicines stimulating and fragrant.
ARTICULATION—The union of one bone with another.
ASPHYXIA—Apparent death, from drowning, hanging, etc.
ASTRINGENTS—Remedies of a “binding” nature.
ATONY—Weakness of every organ.
ATROPHY—A lessening of the whole or any part of the body
AUSCULTATION—The art of sounding the lungs by listening.
- BASSORINE—A gum from a plant growing on the Gulf of Persia.
BILE—A fluid given out by the liver.
BILINE—An ingredient of bile.
BIOPHOBIA—Dread of loss of life.
BOUGIE—A flexible cylinder introduced into the urethra, œsophagus, etc., to open them when contracted.
BRONCHIA—The two tubes which carry air to the lungs
- CAFFEINE—An active principle of coffee.
CALCULUS—A formation found principally in the bladder.
CALCAREOUS—Containing lime.
CALORIFIC—Producing heat.
CALORIC—Heat.
CAPILLARY—Hair-like.
CAPSULE—A covering, as a shell or bag.
CARMINATIVES—Remedies which drive wind from the bowels, relieving pain thereby.
CARNIVOROUS—Flesh-eating.
CASEINE—The cheesy ingredient of milk.
CATAPLASM—A poultice.
CATHARTICS—Medicines which increase the discharges from the lower bowels.
CATHETER—An instrument for drawing water from the bladder.
CAUTERIZE—To burn with caustic.
CARTILAGE—A substance to be found at the joint and ends of the ribs.
CARDIAC—Relating to the heart or to the upper orifice of the stomach.
CELLULAR—Composed of cells.
CERATE—A composition of wax and lard.
CEREBRAL—Belonging to the brain.
CHALYBEATE—Containing iron.
CHOLESTERINE—An ingredient of certain kinds of calculi found in the bile.

- CHYLE**—A whitish fluid drawn from food by the absorbent vessels of the bowels.
- CHYME**—The result produced by the action of the stomach and its juices on food.
- CHIROPODIST**—One who treats diseases of the hands or feet.
- CICATRIZED**—Healed and scarred.
- CILIARY**—Relating to the eye-lashes.
- COAGULUM**—In blood, a clot; in milk, a curdled mass.
- COLANDER**—A vessel for straining liquors.
- COLLIQUATIVE** discharges are those producing rapid exhaustion.
- COLORIFIC**—Producing color.
- COLOSTRUM**—The first milk after child-birth.
- COLLYRIUM**—Eye-water.
- CLYSTERS**—Injections by syringe.
- COLON**—A portion of the large intestines or bowels.
- CONFLUENT**—Running together.
- CONGENITAL**—Occurring at birth.
- COMA**—A state of unnatural sleep.
- CONGESTION**—Accumulation of blood in an organ.
- CONSISTENCY**—Density.
- CONSTRICTION**—A drawing together.
- CORNEA**—A transparent coat of the eye.
- CORDIALS**—Medicines used for exciting the heart.
- COUNTER-IRRITANTS**—Remedies used for causing an irritation in one part to relieve one existing in another part.
- COUP DE SOLIEL**—Sun-stroke.
- CRANIUM**—The skull.
- CUTANEOUS**—Pertaining to the skin.
- CUTICLE**—The outer or scarf-skin.
- CYSTINE**—Belonging to the gall-bladder.
-
- DEBILITANT**—A remedy which reduces excitement.
- DECOCTION**—The operation of boiling certain ingredients in a fluid to get the soluble parts.
- DEGLUTITION**—The act of swallowing.
- DEMULCENTS**—Medicines which protect the sensitive parts of the body.
- DENTITION**—Teething.
- DEPLETION**—The act of emptying.
- DEPILATORY**—That which causes loss of hair.
- DERIVATIVE**—Medicine which, by producing a modified action in an organ, relieves the disease in some other organ.
- DESQUAMATION**—Scaling off.

DEXTRINE—British gum.

DIABETES—A morbid and increased discharge of urine.

DIAGNOSIS—The art of telling the nature of disease.

DIAPHORETIC—Promoting perspiration.

DIATHESIS—Constitution.

DILUENTS—Medicines which increase the fluids of the body

DISCUTIENTS—Remedies employed against tumors.

DISINFECTANTS—Agencies used to subdue or destroy the influence of miasms.

DIURETIC—Medicine having the power of increasing the flow of urine.

DOUCHE—A jet of water thrown on some diseased part of the body.

DIASTASE—A vegetable principle.

DIURESIS—A copious flow of urine

DUCT—Canal.

DUODENUM—The first part of the alimentary canal.

DYSURY—Difficulty of passing urine.

DYSPNŒA—Difficulty of breathing.

EFFERVESCENCE—The agitation produced by the escape of gas through a liquid.

EFFLUVIA—Miasms from marshy ground.

ELECTRO-GALVANISM—Electricity produced by the voltaic pile, or galvanic battery.

ELECTUARY—A medicinal preparation.

EMBROCATION—Liniment.

EMETIC—That which produces vomiting.

EMOLLIENT—Used to soften inflamed parts.

EMPIRIC—A charlatan or quack.

EMULSION—A milky-white preparation of oil and water held in suspension by mucilage.

ENDEMIC—That which is due to some peculiarity of soil or locality.

ENEMA—Injection.

ENUCLEATE—To remove a tumor without cutting into it.

ENURESIS—Involuntary discharge of urine.

EPIGASTRIUM—Pit of the stomach.

EPIGLOTTIS—Valve at the top of the wind-pipe.

ERUCTATION—Belching.

ERYTHEMA—Erysipelas—rose-rash.

EXACERBATION—Paroxysm, or attack.

EXCRETIONS—Discharges from the body of useless matter.

EXCREMENTITIOUS—Applied to discharges from the bowels

EXFOLIATION—Scaling off.

EXHALATIONS—Vapors.

EXTRAVASATIONS—Matter or fluids let out of the proper vessels.

EXPECTORANTS—Medicines which promote the raising of phlegm.

FÆCES—Discharges from the bowels.

FARINACEOUS—Containing farina.

FAUCES—The throat—back part of the mouth.

FEBRILE—Relating to fever.

FERMENTATION—"Working" of liquors.

FETID—Having a bad smell.

FIBER—A component part of all animal and vegetable textures.

FIBRINE—An immediate animal principle.

FLACCID—Soft and yielding.

FLATUS—Wind in the bowels.

FLOCCULI—Certain fleecy membranes.

FÆTOR—A bad smell.

FOLLICLES—Small bags.

FOMENTATION—A partial bathing by means of cloths dipped in hot water and wrung out.

FUCUS—Paint.

FUME—Smoke, vapor.

FUNCTIONAL—Relating to functions of an organ.

GALVANISM—Electricity produced by contact of two or more metals, or by chemical action.

GANGLIONICS—Medicines used to cure ganglions.

GANGRENE—Mortification.

GARGLE—A liquid medicine applied to the throat and then thrown out.

GASTRIC—Belonging to the stomach.

GELATINE—Jelly.

GELATINOUS—Jelly-like.

GENITO-URINARY—Relating to the urinary and genital apparatus.

GESTATION—The period of pregnancy.

GLOBULAR—Round.

GLOTTIS—A small oblong opening in the larynx.

GLUTEN—An ingredient of wheat flour.

GRAMINIVEROUS—Feeding on grass.

GRANULAR—Grain-like.

HÆMOPTYSIS—Bleeding of the lungs.

HECTIC—A slow fever of irritation and debility.

HEMIPLEGIA—Paralysis of one side of the body.

HEMORRHAGE—Bleeding.

HEPATIC—Belonging to the liver.

HERBIVOROUS—Feeding on herbs.

HUMID—Moist.

HUMORAL—Proceeding from the humors.

HYDROCEPHALOUS—Water in the head.

HYGROMETRIC—Pertaining to the measurement of the amount of watery vapor in the atmosphere.

HYPERTROPHY—Unusual bulk of any part of the body.

HYPOCHONDRIASIS—A condition of mind wherein persons suppose themselves sick.

HYSTERIA—Hysterics of women.

ICHOR—The watery part of blood.

ILEUS—Strangulated hernia or nervous colic.

ILIAC PASSION—Strangulated hernia.

INCUBATION—The act of hatching.

INDURATED—Hard from inflammation.

INFUSORIA—Microscopic animals living in water and other liquids.

INFUSION—The pouring of a hot or cold liquid on a substance, to extract thereby its virtues.

INHALATION—Breathing in.

INJECTED—Cast inwardly (applied to eyes).

INOCULATION—The introduction of a disease, generally small-pox, by artificial means.

INSALIVATED—Food mixed with saliva.

INSULATE—To separate from other substances.

INTEGUMENT—Skin.

INTERLOBULAR—Between the lobes of the lungs.

INTERMITTENT—That which has intermissions.

ISCHURIA—Retention of urine.

ISSUES—Small ulcers produced by art.

LAMINATED—Composed of thin leaves.

LARYNX—The organ of voice.

LATENT—Concealed.

LAVEMENT—An injection.

LAXATIVE—A medicine which opens the bowels gently.

LENITIVE—A medicine that palliates disease.

LESIONS—Derangements, disorders.

LIGAMENT—The strong substance which holds bones together at the joints.

LIGATURE—A cord or thread used to prevent bleeding.

LINE—The twelfth part of an inch.

LITHIASIS—Gravel.

LITHIC—Belonging to stone.

LOCHIA—A thin bloody fluid from the womb after delivery.

LOTION—An outward fluid application.

LUMBAGO—Rheumatism in the loins.

LYMPH—The fluid contained in the lymphatics.

MACERATE—Softening by soaking in some liquid.

MALARIA—See MIASM.

MASTICATION—The act of chewing.

MAXIMUM—The greatest amount.

MEMBRANE—A thin, white, flexible skin.

MENSES—The monthly flow of women.

MESENTERY—A membrane attached to and holding the bowels in place.

MESENTERIC—Relating to the mesentery.

METASTASIS—A condition in which a disease is considered to change its location.

MIASM—An emanation from the earth in marshy places.

MIASMATIC—Affected by miasms.

MILIARY—Resembling millet-seed.

MINIMUM—The smallest amount.

MORBID—Diseased, unnatural.

MORBIFIC—Causing disease.

MORIBUND—In a dying condition.

MUCILAGINOUS—Gummy.

MUCO-PURIFORM—Having qualities of mucus and pus.

MUCOUS—Containing mucus.

MUCUS—A substance of the body resembling mucilage.

NARCOTICS—Substances which stupefy.

NEGUS—A mixture of wine, lemon-juice, and water.

NEPHRALGIA—Pain and neuralgia in the kidney.

NEPHRITIS—Bright's disease of the kidneys.

NEUROPATHY—Diseases of the nervous system.

NON-ASCESCENT—Not disposed to acidity.

NUCLEUS—A body around which any thing is collected.

OBESITY—Extreme corpulency.

OCTAHEDRAL—Having eight equal sides.

ŒDEMA—Swelling of the face.

OLEAGINOUS—Oily.

OMNIVOROUS—Applied to animals which eat every kind of food.

OPAQUE—Not transparent.

OPIATES—Medicines which produce sleep.

OSSIFICATION—The process of changing to bone.

OVA—Eggs.

OVARIES—The places where eggs are formed.

OVUM—An egg.

OXIDATION—The process of changing to an oxide.

OXYGENATED—Supplied with oxygen.

PALLIATIVE—A remedy or treatment which merely relieves without curing.

PAPILLÆ—Nipples, or eminences similar to nipples.

PAPULOUS—Resembling or covered with pimples.

PARAPLEGIA—Palsy of the lower half of the body.

PARASITE—An animal which lives on another animal.

PAROTID GLAND—A large gland seated under the ear and near the angle of the lower jaw.

PAROXYSM—A periodical fit or attack of a disease.

PATHOLOGY—Knowledge of disease.

PECTINE—The basis of vegetable jelly.

PELVIS—The bony structure below the abdomen or belly.

PERINEUM—The space between the anus and the genital organs.

PERIOSTEUM—A peculiar fibrous skin or covering of bones.

PERIOSTITIS—Inflammation of the periosteum.

PERITONEUM—A membrane lining the abdomen.

PHLEGMON—Inflammation of the areolar texture.

PHRENITIS—Inflammation of the brain.

PICROMEL—A part of the bile.

PLETHORIC—Full.

PLEURA—The lining of the lungs and inside of the ribs.

POST-MORTEM—After death.

PULP—The soft parts of vegetables reduced to a paste.

PUNCTURE—A wound made by a pointed instrument

PURULENT—Having the character of pus.

PUSTULE—An elevation of the skin with an inflamed base.

PUS—Matter.

PUTRESCENCY—Rottenness.

PUTRID—Impure, rotten.

PYREXIA—Fever, or a feverish condition.

QUARTAN—Taking place every fourth day.

QUOTIDIAN—Taking place every day.

RABIES—Madness.

REACTION—Activity following any diseased influence on the nervous system.

RECTUM—The termination of the intestines.

REGURGITATION—The rising of solids or fluids into the mouth.

REMITTENT—Having alternate increase and decrease.

RENAL—Relating to the kidneys.

RENNET—Curdled milk found in the fourth stomach of a sucking calf.

REPLETION—Fullness.

RESINOUS—Containing resin.

RESOLUTION—Return to a healthy condition.

RIGORS—Chills, shiverings.

ROSACEOUS—Resembling a rose.

RUMINATION—Chewing food the second time, after having been swallowed.

SACCHARINE—Sugary.

SALINE—Salty.

SALIVA—Spit.

SALIVARY—Relating to or forming spit.

SALIVATION—An increased flow of saliva.

SANGUINEOUS—Bloody.

SCALL—Scab.

SCARIFY—To make a small cut into the skin with a lancet or other instrument.

SCIATICA—Rheumatism of the hip.

SCORBUTIC—Relating to scurvy.

SCROTUM—The bag containing the testicles.

SEBACEOUS—Having the nature of suet.

SECRECTIONS—The separation of the blood into various matters.

SECRETORY—That which secretes.

SEDATIVES—Medicines which depress or lower the vital forces.

SEDENTARY—Sitting much.

SENILE—Belonging to old age.

SEROUS—Thin, watery.

SERUM—The watery part of blood and milk.

SETON—(The operation consists in taking a fold of skin and passing a *seton*-needle through with a thread attached.)

SINUS—A long, narrow, hollow track leading from some abscess or diseased bone.

SLUICE—A stream of water.

SOLUBLE—Capable of being dissolved.

SOLVENT—A medicine having the power of dissolving.

SORDES—A black matter which collects on the teeth in certain fevers.

SPECIFICS—Medicines said to remove particular diseases.

SPHINCTER—A name given to muscles of ring form, which contract natural openings.

SPUTA—The matters thrown from the mouth in the act of spitting.

STERNUM—The breast-bone.

STETHOSCOPE—An instrument for sounding the lungs.

STERTORIOUS—Loud, as applied to breathing.

STIMULANTS—Medicines which excite increased action.

STIMULUS—Any thing which excites the animal economy.

STOMACHIC—A medicine which strengthens the stomach.

STRANGURY—Great difficulty in passing water.

STRICTURE—A contraction of some tube or duct.

STRUMOUS—Scrofulous.

STUPOR—Diminished activity of the brain.

SUB-ACUTE—Less than "acute."

SUB-INFLAMMATORY—Mildly inflamed.

SUDORIFIC—A medicine which causes sweating.

SUPPOSITORY—A solid medicine in the form of a cone, to be introduced into the rectum.

SYMPTOMATIC—That which is a sign of some other disease.

SYNCOPE—Complete and sudden loss of motion and sensation.

TENDONS—Cords connecting bones and muscles.

TENESMUS—Frequent, painful, and unsuccessful attempts to evacuate.

TERTIAN—Happening every other day.

THEINE—The active principle of tea.

THERMAL—Warm.

TISSUES—The elements which form the various organs of the body.

TONICS—Medicines which increase the general strength.

TOPICAL—Local.

TORTUOUS—Twisted.

TUBERCLE—A tumor in the substance of organs.

TURBID—Thick and muddy.

TURGID—Bloated.

TYMPANY—Inflammation of the lining membrane of the ear.

TYPHOID—Resembling typhus.

TYPHUS—A continued fever.

UNAERATED—Not purified by passing through lungs.

UREA—An essential part of urine.

URETER—The passage from the kidneys to the bladder.

URETHRA—The passage from the bladder.

UTERUS—The womb.

VACUUM—A space empty of all matter.

VAGINA—The external entrance to the female organs of generation.

VARICOSE VEINS—Swollen veins.

VASCULAR—Relating to the vessels.

VENERY—Sexual intercourse.

VENESECTION—Blood-letting.

VENOUS—Relating to the veins.

VENTRICLE—A cavity.

VESICATION—The formation of blisters.

VESICLE—A small bladder on the skin filled with humor.

VESICULAR—Belonging to a vesicle.

VERTEBRÆ—The bones of the spinal column.

VERTIGO—A state in which every thing seems to be turning or going round.

VIRUS—A morbid poison.

VISCID—Sticky.

A GUIDE TO DIAGNOSIS;

BEING A

COMPLETE INDEX OF SYMPTOMS.

THE following Index is divided into four parts, viz. : DISEASES OF ADULTS IN GENERAL ; DISEASES PECULIAR TO WOMEN ; DISEASES OF CHILDREN ; and EFFECTS OF THE VARIOUS POISONS ON THE SYSTEM. Each of these parts is arranged alphabetically, so that ready-reference can be made to any symptom.

HOW TO USE THIS INDEX.

It is plain to every one that when sickness comes, we can all of us notice some two or more *marked symptoms*. If we look for these symptoms in the *proper division*, we are at once directed to the page where the disease may be found fully described and treated. For instance, a *child* "grinds its teeth during sleep," and "sleeps with eyes partly open;" now, on turning to these symptoms in the division DISEASES OF CHILDREN, we learn at once that the child has "Disease of the Brain."

In observing symptoms in general, the attention should be directed to the various parts of the body which give the earliest warnings of disease. These are, usually,

THE HEAD, EYES, TONGUE, THROAT, PULSE, CHEST, HEART, BREATH, BREATHING; DISCHARGES FROM THE MOUTH, INCLUDING VOMITING; THE SKIN—ITS STATE; THE BOWELS, AND DISCHARGES FROM THEM; THE EXTREMITIES, THE URINE, THE STOMACH, WITH THE GENERAL APPEARANCE OF THE WHOLE BODY.

DISEASES OF ADULTS IN GENERAL.

	PAGES
Arms, cramp of.....	230
Ankles, dropsy of.....	281, 282
do. do. with puffiness of face.....	283
do. swelled.....	319, 369
Anxiety.....	370
Anus, intolerable itching of.....	246
Backache.....	154
Back, chilly.....	144, 150
do. pain in.....	131, 200, 287
do. do. near kidneys.....	187
do. do. in small of.....	193, 196
Barking like a dog.....	236
Baldness.....	308
Bladder, sharp pain in region of.....	189
Bearing down.....	189, 194
Belly, colicky pains in.....	282
do. contraction of muscles of.....	237
do. distended.....	139, 242, 282
do. dropsy of.....	283, 285
do. swollen, doughy, and inelastic.....	319
do. tender when pressed.....	314
Belching.....	220
Breast-bone, sharp pain at lower end of.....	231
Breast, tightness across.....	233
Breath, shortness of.....	276, 367
Breath, offensive.....	200, 243, 303, 319, 350
Breathing, as if strangling.....	200
do. fits of hard.....	280, 372
do. stertorous or loud.....	156, 211
do. very difficult.....	178, 181, 233, 281, 283, 370
Blindness, at night.....	316
do. partial or complete.....	322
Blood, coughed up.....	275
do. from nose.....	206, 371
do. rush of to head.....	371
do. spitting of.....	277
Bloody stools.....	200
Body, becomes yellow.....	310
do. swelled.....	280
do. wasting of.....	283

	PAGES
Bowels, blood from.....	139, 200, 207
do. costive.....	187
do. loose.....	138, 271
do. noises in.....	282
do. pain on pressure of.....	139, 186
do. rice-water discharges from.....	256
do. windy distension of.....	320
Bubo.....	203
Burns.....	356
Carus.....	211
Clap.....	378
Cramp.....	229
do. of arms.....	230
do. of legs.....	230, 255
Chest, oppression in.....	181, 277
Chest-bone, weight at lower part of.....	286
Chewing, painful.....	178
Chilliness.....	131, 177, 198, 350
Chill, every 24 hours.....	145
do. do. 48 do.....	145
do. do. 72 do.....	145
do. severe.....	154, 275
Chicken-pox.....	288
Chilblains.....	361
Cold extremities.....	138, 220
Colic.....	237
Coma.....	138, 150, 197, 211
Complexion, sallow.....	220
Constipation.....	131, 156, 171, 220, 271
Costiveness.....	186, 220, 239, 271, 318
Cough, dry and husky.....	178, 233
do. dry and tickling.....	277
Convulsions.....	138, 171, 226, 367
Cholera, Asiatic.....	253
Consumption.....	275
Corns.....	300
Cough, dry and suppressed.....	139
Coughing of blood.....	275
Countenance, sallow and bloated.....	303
do. of a pale, lemon tinge.....	346
Dandruff.....	297
Deafness.....	199

	PAGES
Debility, general.....	220, 271
Delirium, on awaking.....	367
do.....	131, 138, 155, 171, 197, 200
Diarrhea.....	156, 200, 254
Dizziness.....	351
Dropsy of belly.....	285
Dropsy.....	326
Drowsiness.....	138, 150
Ears, buzzing in.....	206
do. coldness of.....	150
do. ringing in.....	243, 317
do. swellings under.....	178
Emaciation.....	346
Expectoration, bloody.....	181
do. thick.....	178, 181
Extremities, cold.....	138, 150
Eyes, brilliant.....	171
Eyes, cornea of, cloudy.....	175
do. drawn to one side.....	216
do. dull.....	138, 200
do. fixed and staring.....	226
do. partial or complete blindness of.....	322
do. bloodshot.....	257
do. feeling of sand in.....	174
do. pupils contracted.....	171
do. do. dilated.....	211
do. sunken.....	256
do. whites of inflamed.....	174, 181
do. do. red.....	173
do. do. yellowish.....	175, 309
Eyebrows, pain over.....	354
Eyelids, dropping of.....	219
do. glued together after sleep.....	173
do. heavy and depressed.....	351
do. pricking pain in.....	173
do. swollen.....	174
Eruption, around the waist.....	203
do. between the fingers.....	298
do. globular, on inflamed patches of skin.....	289
do. yellow.....	205
do. with great itching.....	205
do. of round flat vesicles.....	288

	PAGES
Eruption, of minute vesicles running together.....	290
do. with sour sweat.....	292
do. of yellow clusters.....	293
do. with burning itching.....	295
do. followed by scales.....	296
do. of small red patches on thighs and legs.....	302
do. with smarting pain on face, and beard falls off.....	307
Face, blueness of.....	145, 155, 256, 369
do. dingy red.....	139
do. flushed.....	131, 155, 275, 350
do. pale.....	131, 135
do. puffiness of.....	371
do. livid.....	370
do. sallow and bloated.....	303
do. small red points on.....	197
do. shrunken.....	144
do. swollen.....	197, 350
do. twisted out of shape.....	226
do. very red.....	171
Fainting.....	232
do. tendency to.....	319, 372
Flatulence.....	194, 281
Fear of danger to life.....	225
Features, shrunken.....	185
Feebleness.....	131
Feet, cold.....	155, 350
do. swelling of.....	283
Fever.....	181, 186, 194, 328
do. hectic.....	275
do. typhus.....	197
Feverishness.....	189
Food, rising in the throat.....	318
Forehead, dull pain in.....	350
do. hot.....	350
Frost-bites.....	361
Fullness, after eating.....	220
Gait, uncertain.....	322
Gaping.....	144, 150
Giddiness.....	131, 206, 216, 254
Gripping pains.....	194, 239, 271
Gonorrhea.....	378
Groin, swelling in glands of.....	379

	PAGES
Gums, bleeding of.....	302
do. blueness of.....	250
Hands, clenched.....	226
do. cold.....	155
do. picking of bedclothes.....	138, 156
do. shrunk.....	144
Head, cold in.....	180
do. dull pain in, going down the back.....	351
do. feeling as if a cord bound around.....	351
do. heat of.....	139
do. noise in.....	254
do. pain in top of.....	193
do. pain in.....	144, 150, 171, 198, 216
do. small red points on.....	197
do. swollen.....	197
Headache, general.....	350
do.	131, 135, 155, 181, 200, 319
do. from disease of brain.....	350
do. rheumatic.....	193, 350
do. sick.....	350
do. nervous.....	350
do. from fullness of blood-vessels.....	350
do. with giddiness and flushed face.....	371
Hearing, acute.....	131
Heart, darting pain at.....	366
do. palpitation of.....	194
do. violent beating of.....	363, 370
do. pulsates feebly.....	372
do. weight, or oppression at.....	369
Heartburn.....	220
Heat of body, increased.....	130, 131
Hiccup.....	138, 200
Hoarseness.....	178, 200, 257
Indigestion.....	193, 271
Itch.....	298
Itching, of body.....	304
Jaws, locked.....	229
do. lower swollen.....	199
do. stiffness of.....	178
Joints, fissures of.....	291
do. swollen and painful.....	191
Knees, drawn up.....	186

	PAGES
Kidneys, pains in region of.....	283
Languor.....	131, 135, 138, 154, 183, 220, 309
Lassitude.....	319
Legs, jerking, or starting.....	138
do. stiff.....	302
Lethargy.....	211
Limbs, aching of.....	155
do. chilly.....	144, 150
do. debility.....	131
Light, painful to eyes.....	171, 173
Lips, blue.....	372
do. do. nearly black.....	150, 155
do. purple.....	286
Liver, pain over.....	187, 309
do. tightness over.....	187
Loins, heat and heaviness in region of.....	330
do. pain in.....	144, 196, 209, 255, 325
Loss, of power to move.....	211, 216
do. of sensibility.....	211, 216
Memory, loss of.....	216
Mind, cloudy.....	351
Motion, aversion to.....	220
Mouth, ash-colored spots in.....	200
do. bitter taste in.....	309
do. blue.....	372
do. clammy.....	350
do. drawn to one side.....	216
do. foaming at.....	211, 226, 235
do. ropy mucus in.....	177
do. dry in the morning.....	154
Muttering.....	139
Nails, blueness of.....	145
Nausea.....	187, 198, 239, 310
Neck, stiffness at back of.....	351
Nervous depression.....	183, 200
Nose, coldness of.....	150
do. bleeding of.....	206
do. picking of.....	243
Nostrils, fluids rejected through.....	200
do. widened.....	178
Numbness.....	216
Oppression, sense of.....	131

	PAGES
Pains, wandering.....	135, 303
do. in loins, on one side, descending to the groin.....	328
do. in right side over the liver.....	309
do. in passing water.....	330
do. in back.....	200
do. in loins.....	209
do. twisting around the navel.....	242
do. dull, in region of loins.....	330
do. over the bladder.....	330
do. at neck of bladder.....	343
do. darting.....	346
do. dull, in forehead or temples.....	350
do. over eyebrows.....	350
do. constant, in head.....	352
do. severe, in the face.....	354
do. sharp, under left nipple.....	367
do. do. do. do. extending to left armpit.....	367
do. on pressing, between ribs.....	367
Palms of hands hot.....	350
Palsy.....	216
Palpitation, violent and irregular.....	367
do. with strong upheaving.....	371
do. frequent.....	372
do. ordinary.....	233, 280, 283, 363
Paralysis.....	216
Penis, irritation of.....	322
do. itching or pain at end of.....	330, 378
do. blood from.....	378
do. ulcer on end of.....	379
do. yellowish discharge from.....	378
Perinæum, deep-seated pain in.....	190
Perspiration, cold.....	183, 275
do. of entire body.....	144
do. sour.....	191
do. thick, and bad smelling.....	319
Pricking feeling.....	216
Pimples, red.....	288
Pulse, feeble.....	131, 150, 185
do. feeble and irregular.....	372
do. frequent.....	131, 135, 138, 198, 275, 277
do. fluttering.....	200
do. full and round.....	191

	PAGES
Pulse, full and hard.....	328
do. irregular.....	286
do. hard.....	131
do. jarring.....	367
do. quickened.....	131
do. soft and weak.....	319
do. small and rapid.....	178, 220, 255
do. wiry.....	186
Restlessness.....	198, 367, 370
Red points, on skin, after two days' fever.....	199
Retching.....	350
Rice-water discharges from bowels.....	256
Sadness.....	225
Saliva, increased flow of.....	354
do. thick.....	350
Scalds.....	356
Scales, on hands and feet.....	299
Sprains.....	356
Straining, with no effect.....	321
Swallowing, difficult.....	139, 177
do. painful.....	178, 199
Sea-sickness.....	251
Sense of fullness.....	351
Sleep, disturbed.....	138, 243
do. dreamy.....	286
do. must be in sitting posture.....	369
Sweating.....	138
do. cold.....	183
Shivering.....	131, 135
do. ushering in fever.....	325
do. followed by pain under left nipple.....	367
Skin, like that of a goose.....	131
do. parched.....	131, 350
do. hot and dry.....	135, 171, 178
do. blotches on.....	139
do. wrinkled.....	139
do. slightly bluish.....	144
do. rough.....	144, 186, 199
do. cold.....	183
do. damp.....	185
do. dry.....	271
do. hot.....	275

	PAGES
Skin, yellow.....	283
do. dry and pale.....	283
do. effusion of blood under.....	302
do. blue and cold.....	372
do. copper-colored eruptions on.....	380
Side, pain, when lying on left.....	187
do. pain in.....	193
Sighing.....	367
Spirits depressed.....	187, 220, 328
Spitting of blood.....	277
Sight, acute.....	131
Shoulder, pain in right.....	187
Snoring.....	211
Sobs.....	367
Soreness, general.....	155
do. of muscles.....	144, 154
Stomach, burning pain at pit of.....	185
do. gnawing at pit of.....	271
do. weight at pit of.....	207
do. pain at pit of.....	139, 200, 314, 325
do. sick.....	151, 171, 186, 198
Sound, painful.....	171
Stools, black.....	207
do. bloody.....	200
do. hard, offensive, variously colored.....	194
do. involuntary.....	138
do. yellow.....	139
do. unnatural in quantity and quality.....	242
do. with "bearing down".....	320
do. straining.....	321
do. sudden and frequent, but ineffectual calls to.....	375
do. passage of, attended with smarting.....	376
Stupor.....	139, 156
Squinting.....	219
Suffocation, sense of.....	231
do. do. on lying down.....	286
Tears, flow of.....	173, 354
Teeth, black matter about.....	156
do. chattering.....	144
do. grinding of.....	211, 243
do. loose.....	303
Thigh, numbness of.....	328

	PAGES
Thirst	131, 135, 138, 154, 171, 186, 191, 198
do. very great	256
Throat, acrid sensation at back of	350
do. sore	178
do. ulcerated	139, 200, 380
Toe, pain in great	194
Tongue, brown fur on	200
do. coated in back part and center	155
do. coated thick	191
do. dry	131, 135, 144, 171
do. dry and white in the morning	220
do. furred	136, 144, 154, 319, 328
do. loaded	243
do. "pointed"	156
do. thick, yellow or brownish coat	197
do. white	131, 135, 171, 271
Tonsils, swollen	177, 199
Torpor	216
Thumbs, turned in	226
Ulceration in mouth	200
Urethra, irritation of	322
Urine, acid, smells strongly	330
do. albumen	325
do. bloody	187, 209, 325, 328
do. coagulable	287, 326, 328
do. clots of blood in	330
do. constant desire to pass bloody	330
do. difficult flow of	325, 380
do. frequent	144, 189, 326
do. frequent desire to pass	131, 272
do. high-colored	138, 191, 328
do. do. and scanty	283, 330
do. large quantity of	272, 322
do. loaded	319
do. painful discharge of	189, 381
do. red	326
do. red deposit in	131, 220
do. scanty	131, 138, 155, 303, 325
do. stoppage of	151, 257, 323, 324
do. white sediment in	145, 155
Veins, swollen	350
do. do. and inflamed	373

	PAGES
Voice, feeble.....	139
do. hoarse	200
Vomiting.....	131, 151, 156, 171, 185, 186, 187, 189, 200, 255, 350
do. bilious.....	171
do. of blood.....	207
do. of onion-smelling matter.....	249
do. sour	220
Warts.....	301
Watchfulness	171
Water, dread of.....	235
do. frequent desire to pass.....	272
Weakness, extreme.....	138, 150
do. muscular.....	131
Wheezing.....	233
Windpipe, pain at top of.....	178
Wrists, starting of.....	138
Worms, passed from bowels.....	243
Yawning.....	144, 150

DISEASES OF WOMEN.

After-pains.....	458
Ankle, swelling of.....	404
Appetite, depraved.....	399
do. loss of, after delivery.....	465
Arteries, throbbing of.....	399
Abdomen, acute constant pain low down in, third or fourth day after delivery.....	463
do. deep-seated pain in, after delivery.....	464
do. do. do. do. <i>relieved by pressure.</i>	465
do. distended with wind.....	419
do. dropsical.....	420
do. drum-like, with fever and deliriums after delivery...	464
do. irritability of, with frequent desire to make water....	417
do. sudden, sharp pain in.....	420
do. tightness and pain across.....	417
Backbone, pain in, with weak legs.....	422
Breast, hard, round, movable, swelling in.....	383
do. violent, darting pains in.....	383
do. excessive flow of milk from.....	455

	PAGES
Breast, hard, swollen, and painful, third day after delivery.....	456
do. flaccid, after delivery.....	466
do. knotty, lumpy, and painful.....	456
do. pain under left, with tightness of chest, and difficulty of breathing.....	417
do. painful, tender, enlarged.....	421
Bearing down.....	388, 409, 417
Breathing, hurried.....	400
Blood, coughing of.....	422
do. vomiting of.....	422
Bowels, offensive discharges from, after delivery.....	465
Cancer, of breast.....	383
Cramps, in pregnancy.....	449
Chest, oppression of, with difficulty of breathing, palpitation, and speechlessness.....	419
Chills, followed by flushes, after delivery.....	465
Courses, painful.....	406
do. with clots, and violent bearing down.....	407
do. with flushes, chills, and headache.....	407
Cough, hysterical.....	421
do. spasmodic.....	417
Coughing of blood.....	422
Croup, imitated.....	421
Constipation, with retention of urine.....	417
Costiveness, in pregnancy.....	435
Depression, during pregnancy.....	451
Ears, ringing in.....	403
Exhaustion, with aching across hips.....	403
Eyes, black circle around.....	400
do. dark circle under.....	395
Eyebrows, pain over.....	421
Eyelids, trembling of.....	422
Faintness, during pregnancy, with pains coming and going about hips and loins.....	451
Flatulence.....	399
Feet, swollen, pitting on pressure.....	400
Giddiness, with headache.....	403
Hair, falling off of.....	400
Headache, during pregnancy.....	450
Head, throbbing pain in, after delivery.....	466
Hiccup.....	421
Hips, aching across.....	403

	PAGES
Languor.....	395
Laughter, hysterical.....	419
Legs, numbness, cramps or palsy of.....	417
Light, painful to eyes, in lately-delivered women.....	466
Loins, aching across.....	403
do. constant pain in.....	432
do. weakness in.....	395
Longings in pregnancy.....	434
Menstruation, painful.....	406
do. with flushes, chills, and headache.....	407
do. with clots, and bearing down.....	407
Milk, checked, or entirely stopped, a few days after delivery. 464,	466
Mind, depressed.....	400
Morning sickness.....	441
Nipple, bleeding from.....	384
do. drawn in.....	384
do. little tubercles around.....	384
Pain, with bearing down, when making water.....	388
Pains, in the back.....	388
do. in the back and loins.....	392
do. at lowest point of backbone.....	394
do. at lower part of backbone, with dragging in the hips and thighs	394
do. in the side.....	400
do. in left side.....	403
do. constant, around brim of hip-bones.....	432
do. going and coming, about hips and loins in pregnancy....	451
Periods, commencement of.....	396
do. discharge of thick matter, before or after.....	395
do. disturbed and painful, with irritability of spine.....	417
do. do not appear at proper time.....	402
do. excessive flow of, with clots.....	402
do. great pain of.....	406
do. sudden stoppage of.....	401
Pulse, frequent and small.....	400
do. frequent, full, and hard after delivery.....	466
do. quick, with hot skin and furred tongue.....	420
Restlessness and sleeplessness after delivery.....	464
Staring about.....	418
Swallow, seeming inability to.....	421
Spine, curvature of.....	413
Spinal irritation.....	417

	PAGES
Sitting up erect from necessity.....	417
Skin, hot, with quick pulse, and furred tongue.....	420, 464
Side, pains in left.....	421
do. pain in, during pregnancy.....	450
Shivering, severe, third or fourth day after delivery.....	463
do. slight, with tongue slightly coated.....	465
Sound, annoying to lately-delivered women.....	466
Stomach, sour.....	399
Stools, dark, slimy, or watery after delivery.....	465
Sudden spasmodic attacks.....	418
Throat, a feeling as of a ball rising in.....	418
do. stiffness of.....	418
Urine, frequent desire to pass.....	388
do. do. do. do. with difficulty in passing.....	430
Vagina, feeling as of some foreign body in.....	388, 409
do. fetid, variously-colored discharge from.....	386, 409
do. heat and soreness of.....	392
do. itching, externally.....	392
do. thick, white discharge from.....	394
do. weight and uneasiness in, with frequent desire to make water.....	409
do. watery discharge from, without smell.....	411
do. whitish discharge from.....	388
Voice, total loss of.....	421
Vomiting, occasional, a few days after delivery.....	464
do. hiccup, and diarrhea, after delivery.....	464
Weeping, hysterical.....	419
Whites.....	391
Womb, darting pains in.....	386
do. falling of.....	388
do. neck of, feels hot, swollen and painful.....	430
do. pain on external region of, increased by pressure.....	430
do. weight and bearing down of.....	430

DISEASES OF CHILDREN.

Appetite, bad or variable.....	499
do. depraved.....	492
do. greedy.....	501

	PAGES
Abdomen, enlarged and hardened glands in middle of, causing	
pain on pressure.....	495
do. swollen.....	518
do. sunken.....	518
Belly, bladders formed on.....	546
Belly, dull pain in.....	501
do. hotter than rest of body.....	501
Breasts, swelled, in infants.....	548
Breath, bad, offensive.....	245
Breathing, interrupted and sighing.....	503
do. laborious, and convulsive.....	513
do. loud, difficult, labored.....	526
Body, hot, with cold limbs.....	518
do. thinning of.....	245
Bowels, confined and shrunken.....	500
do. green discharges from.....	515
do. large do. do.	501
do. loose during teething.....	481
do. looseness of.....	517
do. light-colored discharges from.....	518
do. irregular.....	492
do. protruding.....	524
do. scanty, mud-colored discharges from.....	499
do. slimy discharges from.....	245
Chest, becomes narrow, and breastbone projects forward.....	492
Cheeks, pale and cool.....	503
do. ulcers on inside of.....	509
Children, still-born.....	542
Chills and heat.....	529
Chin, swelling of glands under.....	512
Convulsions, during teething.....	481
Cough, croupy.....	513, 529
do. rough, with hoarseness.....	526
Coughing, in paroxysms, with difficult breathing and whooping..	549
Cough, sounding as from a trumpet.....	526
Croup.....	526
Crowing sound when drawing breath.....	527
Cry, short and sharp.....	499
Delirium.....	518, 529
do. at night.....	499
Dreams, unpleasant.....	245
Digestion, impaired.....	492

	PAGES
Dizziness, heaviness, giddiness, and headache.....	498
Drowsiness, restless.....	499
Ears, bad smelling discharge from.....	483
do. eruption behind.....	483
do. inflamed membrane of.....	483
Emaciation, with soft, flabby flesh.....	518
Eyes, half-shut, regardless.....	503
do. kept closed.....	499
do. livid, protruding.....	527
do. loss of power to direct to any object.....	467
do. opened and closed, with expression of languor.....	502
do. suffused and watery.....	529
do. thrown upward.....	467
do. yellowness of whites in, in infants.....	547
do. whites of, red in infants a few days old.....	547
Eyebrows, knit, to shut out light.....	499
Eyelids, swollen, in infants a few days old.....	547
Face, dark, copper-color of.....	545
do. feverish.....	529
do. flushed, dry skin and hot head.....	499
do. round red dots on.....	529
do. shows anxiety and suffering.....	499
do. swollen and purple.....	527
Features, pale and shrunken.....	517
Feet, swollen, dry, hard, and cold.....	546
do. cold.....	515
Fever.....	245
do. remitting.....	518
Flesh, loss of, notwithstanding vigorous suckling.....	515
do. soft and flabby.....	492
Food, no desire for, only for drinks.....	515
Forehead, round red dots on.....	529
do. tilted forward.....	507
Giddiness.....	245
Gripping, flatulence and diarrhea.....	515, 523
Hair, falling off in patches.....	538
Hands, cold.....	515
Head, enlarged.....	492
do. enlarging of.....	507
do. heaviness of, with drowsiness.....	502
do. hot, with dry skin and flushed face.....	499
do. long, broad, and deep, but flattened at the top.....	507

	PAGES
Head, rolling of on the pillow.....	522
do. soft spot of, full and prominent.....	503
do. do. do. sunken in.....	503
Heat and chills.....	529
Hoarseness, with rough cough.....	526
Languid and feverish.....	492
Languor, shivering, hot skin and thirst.....	529
Legs, weak and bending.....	492
do. one stretched out, the other drawn up.....	500
do. drawing up of, with crying and local pain.....	467
Light, painful.....	547
Lips, blue; also cheeks and nails blue.....	544
do. swollen and surrounded with eruption.....	509
Mouth, clusters of white spots in.....	510
do. dribbling of saliva from.....	509
do. foaming at.....	545
do. heat, and redness of the lining of.....	509
do. ulcers on roof of.....	509
Navel, dark red shining spots on or near.....	545
Neck, scrofulous abscess in.....	483
do. swelling of glands of.....	483
Nose, picking of.....	245
Nostrils, moist.....	501
Palate, swelling of.....	512
Peevishness and fretfulness.....	514, 515
Perspiration, after eating or drinking, with signs of fever.....	501
Pimples, red, on face, neck, and hands of infants a few days old.	548
Prostration, with cold clammy skin.....	517
do. with formation of thick, white, false membrane in throat	512
Pulse, quick.....	529
Purging of green matter.....	515
Restlessness and difficulty of breathing.....	546
Scalp, eruption on.....	483
Swallowing, difficult.....	510
do. difficult, with returning of liquids through nostrils.	512
Sleep, starting from.....	245, 467, 499
Sleeping with eyes partly open.....	499
Sneezing and running from nose.....	527, 529
Skin, blue patches scattered over.....	518
do. clammy	518
do. cold.....	503

	PAGES
Skin, dry and hot.....	517
do. dry and rough.....	492
do. yellowness of, in infants.....	547
Spine, round tumor on lower part of, when born.....	543
Stomach, rejects every thing.....	517
do. tenderness of.....	522
Stools, dark brown, or black and offensive.....	524
do. feculent and liquid.....	523
do. green.....	515, 524
do. large.....	501
do. mixed with mucus.....	523
do. offensive and slimy.....	546
do. white.....	496
Stupor.....	500
do. following rolling of the head on pillow.....	522
Suck, refusal to.....	546
Suffocation, from formation of false membranes in throat.....	513
Teeth, grinding of, during sleep.....	499
Teething, convulsions during.....	481
do. fever during.....	481
do. gums red, swollen, and hot.....	481
do. looseness of bowels during.....	481
Thirst, great.....	499, 515, 523
Twitching of angles of mouth.....	502
do. of face and limbs.....	502
Throat, brown spots in, surrounded by purple skin, with bad smell.....	511
do. cluster of white spots in.....	510
do. patches of false membrane in back part of.....	512
Tongue, red at tip and edges, white fur on center.....	499
do. ulcers on.....	509
do. with ulcerated edges.....	518
do. white or yellow.....	523
Thumbs, drawn into the palms of the hands.....	502
Ulcers on inside of cheek.....	509
do. on roof of mouth.....	509
do. on tongue.....	509
Urine, much colorless, discharged.....	501
do. scanty.....	529
Vagina, scrofulous discharge from.....	484
Voice, hoarse and indistinct.....	513
do. tone of, alters.....	510
Vomiting, accompanied by purging.....	517

	PAGES
Vomiting, and retching.....	515
do. of greenish phlegm.....	499
do. of curdled milk.....	515
Wakefulness, with rolling of head on pillow.....	522
Walk, slow.....	501
Wasting away of body, regular and slow.....	494
Wheezing and labored breathing.....	527
Whooping-cough.....	548
Yellowness of skin and whites of eyes in infants a few days old.	547

CASES OF POISONING.

Agitation, nervous.....	566
Abdomen, drum-like and painful.....	558
Apoplexy.....	563
Back, stiffness of.....	565
Belly, tenderness of.....	555
Belching, coppery.....	559
do. with vomiting and hiccup.....	558
Breathing, by spasms or fits.....	565
do. very heavy and labored.....	560
do. difficult.....	555, 557, 558
Body, red, puffy blotches on.....	568
Bowels, bleeding from.....	557
do. pain in, like "colic".....	555
do. signs of inflammation in.....	556, 561
Cramps and convulsions.....	555, 557
do. do. frequent.....	557
Chills.....	568
Coldness of skin and extremities.....	558
Colic.....	561
do. and purging.....	559
Convulsions.....	558
do. alternating with fainting.....	561
Deafness, with headache.....	551
Delirium.....	558
do. of a merry, laughing character.....	566
do. followed by dozing, with deep snoring.....	566
Drowsiness.....	565
Eyes, pupils of contracted.....	563

	PAGES
Excitement, violent.....	566
Face, redness and swelling of.....	568
Faintness.....	560
Fainting, with griping of stomach.....	557
Griping of stomach.....	557, 558
Headache, with deafness.....	561
Head, drawn back, with stiff back.....	565
do. pains in.....	568
Heartburn and hiccup.....	557
Hoarseness of voice.....	558
Jaundice, appearance of.....	558
Jaws, locked.....	566
Insensibility, sudden, with falling down of person affected.....	572
Mind, confused.....	573
Mouth, bleeding from.....	557
do. dryness of, with intense thirst.....	558, 560
do. dry and hot, with bitter taste.....	562
do. metallic taste in.....	557, 558
do. sharp, sour, burning taste in.....	555
do. Urinous taste in.....	556
Nausea and fainting.....	558
do. with efforts to vomit.....	559
do. with headache and vomiting.....	573
Nose, bleeding from.....	557
Palsy.....	558
do. of limbs.....	561
Pulse, sinking.....	566
Purging of dark bloody matter.....	556
do. of green, watery matter.....	558
do. with pains in belly.....	566
Retching and vomiting.....	566
Swallowing, burning difficulty of.....	556
do. difficult.....	558
do. do. and painful.....	558
do. do. with strangling sensation.....	562
Sleepiness, followed by stupor, palsy, and apoplexy.....	563
Sweats, cold, clammy.....	555, 559, 560
Skin, itching of.....	568
Sight, dim.....	565
Stomach, burning pain in.....	555, 558
do. sharp pain at pit of.....	556, 557
do. signs of inflammation of.....	561

	PAGES
Stomach, great pain at pit of.....	561
Stools, bloody.....	558
do. frequent, with blood.....	555
do. green, watery, and "bearing down".....	558
Stupor.....	563, 565
do. sudden.....	564
Taste, bitter.....	562
do. coppery.....	559
do. metallic, with tightness of throat.....	560, 562
do. nasty metallic.....	558, 560
Thirst, great.....	555
Throat, burning in.....	555
do. strangling in.....	562
do. tightness of, with metallic taste in mouth.....	560
Tongue, dry and parched.....	559
Tottering, as if intoxicated.....	562
Urine, difficulty and pain, with some blood in passing.....	561
do. painful and frequent attempts to pass.....	555
Vomiting of bitter stuff, with blood.....	555
do. of bloody matter, with quick pulse.....	561
do. do. do. with sinking pulse.....	560
do. with belching and hiccup.....	558, 560
do. of matter mixed with blood.....	556
do. of greenish-yellow matter mixed with blood, after much retching.....	558
do. severe.....	557
Voice, hoarse.....	558
Weakness and sinking.....	562

TABLES OF DOSES, WEIGHTS, AND MEASURES.

APOTHECARIES WEIGHTS.

20 grains	make one scruple,	marked.....	ʒj.
3 scruples	do. drachm,	do.	ʒj.
8 drachms	do. ounce,	do.	ʒj.
12 ounces	do. pound,	do.	lbj.

LIQUID MEASURES.

60 drops, or 60 minims	make one drachm,	marked....	ʒj.
8 drachms	do. ounce,	do.	ʒj.
20 ounces	do. pint,	do.	Oj.
8 pints	do. gallon,	do.	Cong.

For the information of those who may not have at hand the measures used by druggists, the following table is prepared :

LIQUIDS.

A tea-spoonful	of liquid equals	60 drops, or one drachm.
A table-spoonful	do. do.	$\frac{1}{2}$ ounce, or four drachms.
A dessert-spoonful	do. do.	180 drops, or three drachms.
A wine-glassful	do. do.	$1\frac{1}{2}$ ounces.

A tea-spoonful of *light* powder, such as magnesia, equals ten to twenty grains ; of a *heavy* one, as sulphur, thirty to forty grains ; of a metallic oxide, sixty to eighty grains.

DOSES OF MEDICINES.

These must be graduated according to the age. Suppose the dose for a grown-up person to be 12 grains, then for a child under

1 year,	the dose will be	one-twelfth, or 1 grain.
2 do. do.	do. one-eighth,	or $1\frac{1}{2}$ grains.
3 do. do.	do. one-sixth,	or 2 do.
4 do. do.	do. one-fourth,	or 3 do.
7 do. do.	do. one-third,	or 4 do.
14 do. do.	do. one-half,	or 6 do.
20 do. do.	do. two-thirds,	or 8 do.
21 to 60 years	the dose will be	12 do.

Above the age of 60 years, the dose diminishes as the age increases.

INDEX.

PAGES	PAGES
Abdomen or pendulous belly..... 69	Air-pipe, foreign substances in..... 576
Abercrombie on dyspepsia..... 222	Alarming convulsions, signs of.... 498
Abscess, milk..... 456	Albumen, in nutrition..... 64
Abscesses in children..... 546	do. in urine..... 332
Absorbents..... 34	Alcohol, poison..... 566
Acetate of lead..... 278	Alcoholic drinks..... 75, 79, 81
Accidents..... 570	Ales..... 75
Acid, carbonic, fevers from..... 572	Alkalies, poisoning by..... 556
do. gallic..... 210	Alkaline waters..... 121
do. nitro-muriatic bath..... 48, 583	Almond emulsion..... 90
Acids in urine..... 331	Aloes and quinine..... 316
do. poisoning by..... 555	Alum draughts..... 278
Acid for ringworm..... 541	Alteratives..... 602
do. nitric, poison..... 555	Amenorrhœa..... 399
do. hydrochloric, poison..... 555	Ammonia, poisoning by..... 556
Acidulous waters..... 121	Amaurosis..... 322
Acne or copper nose..... 306	Anasarca, or dropsy..... 283
Accouchement, directions after..... 459	Aneurism..... 373
Aconite, poison..... 562	Angina membranacæ..(diphtheria.) 512
Acrid plants, poisonous..... 562	do. pectoris..... 231
Advice to emigrants..... 606	Animals..... 708
After pains..... 458	Animal diet..... 736
Agents, noxious to life..... 17	Animal life, how supported..... 63
Ague..... 145	Animal matter, ultimate elements. 19
do. an endemic..... 24	Animal matter tissues require ni-
Air, atmospheric, its composition	trogen..... 63
and state..... 18	Animate beings..... 708
do. quantity necessary in respira-	Animation, suspended from char-
tion..... 19	coal vapors..... 571
do. heated and vitiated, a cause	Animation suspended..... 576
of disease..... 19	do. do. from strang-
do. cold streams of, to be avoided. 20	ling..... 576
do. as to humidity..... 21	Anodynes..... 603
do. sudden variations of, danger-	ANTACID MEDICINES..... 591
ous..... 21	Potash
do. causes of vitiations of..... 23	Soda

PAGES	PAGES
ANTACID MEDICINES..... 591	Arteries 718
Ammonia	Arterial blood, its use..... 18
Sal volatile	Artificial goat's milk..... 91
Chalk	do. asses' milk..... 92
Magnesia	Asiatic cholera..... 253
Soap	Assafetida clyster..... 238
Antimony, as poison..... 557	Asthma 233
Anti-putrescent gargle..... 202	ASTRINGENT MEDICINES..... 604
ANTISPASMODIC MEDICINES..... 604	Catechu
Ammonia	Kino
Assafetida	Logwood
Galbanum	Oak bark
Sagapenum	Galls
Valerian	Lime-water
Camphor	Whortleberry
Cajeput oil	Bistort
Anus, prolapse of, in children..... 524	Pomegranate
APERIENT MEDICINES..... 592	Tormentil
Manna	Buchu
Scammony	Pareira
Charcoal	Rhatany
Magnesia	Linseed
Sulphur	Liverwort
Castor-oil	Sarsaparilla
Tamarinds	Sulphuric acid
Dandelion	Alum
Cream of tartar	Sulphate of iron
Croton oil	Sulphate of copper
Rhubarb	Zinc
Jalap	Sugar of lead
Aloes	Atmosphere, electrical variations
Calomel	of..... 24
Colocynth	Atonic ulcer..... 288
Aperient pills..... 132	Atrophy 494
do. mixture..... 132	Azote 709
Aphthæ..... 509	
Apoplexy 211	B
Apple-tea..... 89	Bacon, rancid, poison..... 567
Apples and rice, or snow-balls..... 93	Bad breast..... 456
Aquafortis, poison..... 555	Bakers' itch..... 297
Ardent spirits..... 79	Balance step..... 679
Ardent spirits, as poisonous..... 566	Baldness 308
Arnott's valve..... 23	Bandage, in hydropathy..... 60
Arrack 80	Barbers' itch 307
Arrowroot pudding..... 92	Barbadoes, nut..... 562
do. blanc mange..... 93	Barettier..... 29
do. mucilage, with milk or	Barley wine..... 96
beef 93	Barley water..... 90
Arsenic 558	Barrenness 428

	PAGES		PAGES
Baryta as a poison.....	561	Blisters, by lunar caustic.....	586
Bath, the cold, tepid, warm.....	44, 45	do. danger from, in children,	
do. in what diseases useful.....	45	and when.....	587
do. the hot.....	46	Blisters with nitric acid.....	253
do. the vapor.....	46	Blood, vomiting of.....	207
do. the hip.....	47	do. spitting of.....	277
do. the shower.....	47	do. from kidneys.....	209
do. the foot.....	48	do. from bowels.....	208
do. for liver diseases.....	48	Blue disease.....	372, 544
do. of iodine.....	489	do. pill	140
do. hot douche.....	489	do. line on gums a sign of lead	
do. air-pump vapor.....	49	poison.....	250
do. the shower.....	49	do. stone, poison.....	559
do. remarks on.....	50	do. vitriol, do.	559
do. hydropathic	55, 56	Body, natural heat of.....	20
Bathing, rules for.....	50	Boiling	65
Bathing during pregnancy.....	437	Bowels, looseness of.....	271
Baths, their temperature.....	44	do. lower stricture of.....	321
Batter pudding.....	94	do. looseness of during preg-	
Baume de vie.....	595	nancy	445
Beaumont's experiments.....	753	Brain, inflammation of.....	171
Bedrooms and beds.....	31	do. diseases in children.....	498
Beef-tea.....	88	do. overworked.....	28
Beer	75	Branchiæ	718
Belladonna against scarlet fever...	202	Brandy.....	80
Belly, drum.....	281	Bread, panada.....	88
do. dropsy of.....	285	Bread pudding.....	93
Benzoin ointment and lotion.....	455	Bread, the "staff of life"	737
Bile	37	Breakfast, proper time for.....	67
do. its uses.....	37	Breast, cancer of.....	383
do. but little in the motions.....	38	do. sore	438
do. quantity of, poured into the		do. distended	449
bowels	38	do. shields for.....	455
Bilious disorders.....	38	do. bad, or milk abscess.....	456
do. do. prevention and		do. pang.....	231
treatment of.....	39	Breasts, during pregnancy.....	438
do. evacuations, what are, and		Breathing	19
what are not.....	311	Bright's disease.....	325
do. disorders in hot climates...	312	Broiling and baking.....	66
Bilious fevers.....	142	Broken bones.....	579
Birth of beings.....	707	Bronchitis, or inflammation of bron-	
Bittersweet, poison.....	563	chi.....	181
Bladder, inflammation of.....	189	Bronchocele.....	349
do. falling down of.....	387	Broths.....	95
do. during pregnancy.....	449	Bruises, or contusions.....	578
Blanc-mange, arrowroot.....	93	Bryce's test.....	534
Bleeding from nostrils.....	206	Bryony, poison.....	562
Blisters, immediate or instantane-		Bulimia.....	317
ous.....	586	Bunions.....	300

	PAGES		PAGES
Burns and scalds.....	356, 577	Chicken-breasted children.....	32
do. contractions after.....	360	Chicken tea.....	89
Buttercup, poison.....	562	Chilblains, lotion for.....	362
Buttermilk.....	92	Child-bed fever.....	464
C			
Calculus in urine.....	341	Childhood, treatment of.....	486
Calomel, poison.....	558	do. convulsions in.....	498
Camphor, poison.....	564	Children, diseases of.....	467
Cancer, or scirrhus.....	345	do. doses of medicine for.....	469
do. operation for.....	387	do. medicines for.....	469-479
do. of breast.....	383	do. mortality of.....	22
do. of womb.....	383	do. still-born.....	542
Canker in mouth.....	514	Chills and cold feet, pernicious.....	43
Canine madness.....	235	Cholera.....	252
do. appetite.....	317	do. Asiatic.....	253
Cantharides as poison.....	561	do. infantum.....	517
Carbonic acid as poison.....	571	do. how produced.....	25
Carbon in breathing.....	18	Chloride of soda injection.....	387
do. quantity of, in fibrine.....	19	Chlorosis.....	399
do. a deadly poison, when.....	19	Chronic pericarditis.....	369
do. less got rid of, in hot cli- mates and in hot weather than in cold.....	40	do. inflammation of womb.....	431
Carditis.....	367	Chyle, receptacle of.....	35
Carus.....	211	Chylification.....	750
Caseine.....	63	Chymification.....	750
Castor-oil cakes.....	479	Circulating system.....	709
do. emulsion.....	472	Citrate of iron.....	395
Cataplasms, charcoal.....	171	Clap.....	378
do. chlorinated soda.....	171	Climbing.....	701
Catarrh.....	179	Climate, hot, influence over liver..	311
Cathartics.....	593	Climatology of United States.....	97
Cauliflower excrescence of the womb.....	411	Clothing.....	43
Caustic, blister.....	586	do. during pregnancy.....	436
Caustic soda, poison.....	556	Clyster of assafetida.....	424
Celandine, poison.....	562	Coal gas as a poison.....	573
Cellular membrane.....	710	Cold water, to drink.....	50
Cellular tissue, induration of.....	546	do. intense.....	576
Chalk, mixture against diarrhea..	591	do. common.....	179
Chalybeate waters.....	122	Cold and chilblains.....	361
Champagne wine.....	78	Colic.....	237
Cherry laurel, poison.....	563	do. from worms.....	241
Chest, dropsy of.....	286	do. painters'.....	249
Chewing and swallowing.....	744	Colon, stricture of.....	321
Chicken broth.....	95	Coma.....	211
do. panada.....	95	Combustion, spontaneous.....	83
Chickenpox.....	288	Comedones.....	305
		Consumption.....	275
		Contusions.....	578
		Convulsions, signs of.....	501
		Cookery.....	64
		do. for the sick.....	85

	PAGES		PAGES
Copper as a poison.....	559	Diminution of mortality.....	23
do. nose.....	306	Diphtheria	512
Cordial medicines.....	596	Discharges, female.....	396
Corpulency.....	279	Disease, general causes.....	130
Corns	300	do. of kidneys.....	325
Corroding ulcer in womb.....	412	do. venereal.....	379
Corrosive sublimate, poison.....	558	do. prevention of.....	17
Courses, stoppage of.....	401	Diseases of pregnancy.....	442
Costiveness	318	do. of children.....	467
do. drops for.....	320	do. of the skin.....	288
do. during pregnancy.....	435	do. of the heart.....	363
Cow-pox.....	532	do. of women.....	383
do. and small-pox, identity of.....	536	Disinfectant, heat.....	203
Cramp	229	Disinfecting, clothes.....	203
do. liniment for.....	253	Dislocations	581
do. in pregnancy.....	449	Diuretics.....	600
Credulity of the public.....	51	do. in dropsy.....	284
Cretinism.....	350	Doses of medicine, as to age.....	793
Croton oil, externally.....	585	Douche bath in hydropathy.....	56
Croup, true and spurious.....	526	do. in hysteria.....	424
Crown imperial, poison.....	562	Drake's, Dr., prescription for ague	
Curvature of spine.....	413	and fever.....	148
Cuts and wounds.....	579	do. prescription for remit-	
Cystites.....	189	ting fever.....	158
D		Draughts, effervescing.....	133
Daffodil, poison.....	562	Dress, protection by.....	43
Dandelion, for the liver.....	189	Drops, for pain during pregnancy.....	408
Dandriff	297	do. for inflamed eyes.....	583
Deadly nightshade, poison.....	564	do. for costiveness.....	320
Deaf and dumb.....	317	Dropsy.....	282
Decline, mesenteric.....	494	Dropsy of belly.....	285
Decoctions.....	605	do. of kidneys	287
Deformities.....	543	do. of cellular membrane.....	283
Delirium tremens.....	607	do. of chest.....	286
Delivery, inflammation after.....	463	Drowning.....	574
Detector-acid	541	Drum belly.....	281
Diabetes	271	Dry pimples.....	294
Diaphoretics.....	601	Dry tetter.....	297
Diarrhea	271	Drying-up of milk.....	462
do. of infants.....	523	Dysentery	194
do. during pregnancy.....	445	Dysmenorrhœa.....	406
Diet and food.....	62	Dyspepsia	220
Difficult menstruation.....	406	Dysury	323
Difficulty in voiding urine.....	323	E	
Dilatation of the heart.....	372	Ear, scrofulous.....	492
Diluents	600	Ears, substances in.....	577
Dinner.....	68	Eating, times of.....	67
do. pills.....	321	Eczema.....	290

PAGES	PAGES
Hectic fever..... 275	Infants, apparent death in new-born..... 577
Heat, as a disinfectant in plague and fevers..... 203	Infants' purulent ophthalmia..... 547
Hedge hyssop, poison..... 562	Inflammatory fever..... 181
Hellebore, poison..... 562	Inflammation, chronic, of womb.... 431
Hemiplegia..... 216	do. powders against 182
Hemlock..... 564	Inflammation, and its termina-tions..... 162
Henbane, poison..... 563	do. of brain..... 171
Hepatitis 188	do. of eye..... 172
Herbivorous animals..... 735	do. of tongue..... 176
Hernia..... 582	do. of tonsils..... 177
Herpes..... 289	do. of larynx..... 178
Hiccup..... 231	do. of trachea..... 179
Homeopathy..... 54	do. of nostrils, etc., ca-tarrh..... 179
Hot climates..... 312	do. of bronchi..... 181
How to nurse the sick..... 627	do. of heart..... 370
Human ruminants..... 318	do. of lungs..... 184
Humid scall, or eczema..... 290	do. of pleura..... 184
Hunger..... 724	do. of stomach..... 185
Hydrocephalus..... 507	do. of bowels..... 186
Hydrochloric acid, poison..... 555	do. of pericardium..... 367
Hydrogen..... 573	do. of peritoneum..... 187
Hydropathy..... 54	do. of kidney..... 187
Hydrophobia..... 235	do. of liver..... 187
Hypochondriasis..... 225	do. of bladder..... 189
Hypertrophy..... 371	do. of womb..... 430
Hysteria 418	do. of urethra..... 190
Hysterics..... 418	do. of veins..... 373
I	
Ichneumon 241	Influenza..... 183
Ichthyosis..... 299	Indolence and indulgence, when specially dangerous..... 69
Icterus..... 309	Infusions, tonic, of calumba, orange-peel, or gentian..... 134
Iliac passion..... 239	Injection of chloride of soda..... 387
Imagination and fancy, too much fostered 30	do. purgative..... 479
Immoderate flow of urine..... 322	Ingesta, and egesta..... 37
Immediate or instantaneous blisters..... 586	Inoculation of small-pox condemned..... 537
Impetigo 293	Insects, stings from..... 567
Inanimate beings..... 708	do. in the eyes or ears..... 577
Incontinence..... 322	Intellect, not duly exercised, a cause of disease..... 28
Indian club exercise..... 671	do. precocious, examples of.. 29
Indigestion 220	Intellectual function of animals... 720
do. of infants..... 514	Intestines, action of, on food..... 748
do. during weaning..... 515	do. Beaumont on, do..... 749
Induration of cellular tissue..... 546	Intense cold..... 576
Infantile indigestion..... 515	
Infants' swelled breasts..... 548	

	PAGES		PAGES
Iodide of lead ointment.....	348	Leucorrhœa, from glands at neck	
Iodine, foot bath.....	489	of womb.....	394
do. poisoning by.....	557	Lichen.....	294
Irritation from blisters in chil-		Life.....	705
dren	587	do. dangers to.....	609
do. spinal.....	417	Lightning-stroke	576
Irritable womb.....	432	Lime, poison.....	556
Irish moss.....	87	do. in the body.....	738
Ischuria	324	Lime-water, poison.....	556
Itch, the.....	298	Liniments	584
do. ointments for.....	299	Linseed.....	605
do. ointment	584	do. tea	90
do. washerwoman's, bakers'.....	297	Litharge, poison.....	562
do. insect.....	298	Lithiasis	328
Itching or pruritis.....	304	Liver disease.....	188
do. application for.....	291	do. stimulated in hot climates... 311	
		do. of sulphur a poison.....	560
J		do. inflammation of.....	187
Jaw, locked, in hysteria.....	425	Liverwort.....	605
Jaundice, or icterus.....	309	Locked jaw, hysterics.....	425
do. of infants.....	547	Locomotive exercises.....	678
K		Longings.....	434
Kidneys, inflamed.....	187	Looseness of bowels.....	271
do. dropsy of.....	287	Lotion, evaporating or cooling..... 136	
do. granular disease of.....	325	do. for chilblains.....	362
do. inflammation of.....	328	do. various.....	583
L		Low spirits.....	225
Labor, when to be expected.....	454	Lozenges of manna.....	475
Lacteal absorbents.....	35	Luncheon.....	67
Lacteals.....	718	Lungs	718
Land-scurvy.....	302	do. inflammation of.....	184
Laryngitis.....	178	M	
Larynx, inflammation of.....	178	Maccaroni pudding.....	94
Laugh, sardonic.....	228	Madeira wine.....	78
Laurel rose, poison.....	565	Mad dogs, poison.....	567
Lead colic.....	249	Madness, canine.....	235
do. iodide of.....	348	Malaria, described.....	24
do. sign of.....	250	do. conditions of its origin,	
Leaping.....	689	etc	25
Legs, enlarged veins of in preg-		Management during pregnancy... 433	
nancy	448	Mania a potu.....	607
Lemonade	90	Marching	682
Lemon-peel tea.....	89	Marshmallow tea.....	90
Leprosy	296	Marsh marigold, poison.....	562
Lethargy.....	211	Meadow saffron.....	192
Leucorrhœa, or whites.....	391	do. do. poison.....	562
do. from womb.....	394	Meals.....	67
		Measles	529

	PAGES		PAGES
Niter as poison.....	560	Painters' colic.....	249
Nitro-muriatic acid lotion.....	583	Palpitation.....	363
do. do. bath.....	583	Palpitations in pregnancy.....	446
Nose, bleeding at.....	206	Palsy.....	216
do. copper.....	306	Panada, chicken.....	95
Nostrils inflammation of.....	179	do. bread.....	88
Nursing.....	460, 461	Papulous scall.....	294
Nutrition.....	62	Paraplegia.....	218
Nursing the sick.....	627	Parasites.....	241
Nux vomica, poison.....	565	Parent.....	707
Nyctalopia.....	316	Partial palsy.....	218
O		Paste, Ward's.....	209
Oatmeal gruel.....	87	Passion, iliac.....	239
do. porridge.....	93	Passions, to be regulated.....	31
Obstipatio.....	318	do. causes of nervous disor-	
Oil, castor, biscuits of.....	479	ders.....	31
do. of vitriol, poisoning by.....	555	Pericarditis, chronic.....	369
Ointment of iodide of lead.....	348	Pericardium, inflammation of.....	367
OINTMENTS.....	584	Periods, retention of.....	401
Tartar emetic		Perspiration.....	40
For eyelids		do. matters thrown off by.	41
For itch		Perspiratory tubes.....	41
Of spermaceti		Peritonitis, after delivery.....	463
Operation for cancer.....	387	Peritonæum, inflammation of.....	187
Opium, poisoning by.....	563	Pessaries.....	389
Ophthalmia.....	172	Phlebolites.....	375
do. purulent, of children..	547	Phlebites.....	373
do. do. of adults.....	173	Phlegmasia dolens.....	618
do. rheumatic.....	175	Phosphates in urine.....	331
do. gonorrhæal.....	176	Phosphorus, poisoning by.....	561
do. strumous.....	174	do. in the body.....	737
do. catarrhal.....	173	Physical training.....	654
Organization.....	706	Physiology.....	705
Organs, purifying the blood.....	36	Piles.....	208
Orgeat.....	90	do. ointment for.....	584
Outlets for carbon.....	36	do. powder for.....	595
Oxalate of lime, in urine.....	332	do. during pregnancy.....	447
Oxalic acid in urine.....	331	Pills, aperient.....	594
do. poisoning by.....	556	do. dinner.....	321
Oxide, carbonic.....	573	Pimples, dry.....	294
Oyster.....	64	do. from use of ointment.....	585
P		Pityriasis.....	297
Packing, wet-sheet and blanket....	58	Plague.....	203
Painful monthly periods.....	406	Plants, poisonous.....	562
Pains in pregnancy.....	450	Pleura, inflammation of.....	184
do. from inflammation.....	610	Pneumonia.....	184
do. darting, of the heart.....	366	Poison lettuce, poison.....	563
		do. vine, poison.....	562
		Poisons.....	555

	PAGES		PAGES
Polypi of womb.....	409	Pudding, rice.....	94
Poppy, poison.....	563	do. macaroni or vermicelli..	94
Poor man's mixture.....	591	do. batter	94
Port wine.....	78	do. tapioca.....	94
Porridge, oatmeal.....	93	Puerperal fever.....	464
Position.....	667	do. intestinal irritation....	465
Posset, sago.....	92	Purgative mixture.....	132
Potassium, iodide of.....	348	do. injection	475
Potash, poison.....	556	Purpura.....	302
do. carbonate of, poison.....	556	Purulent ophthalmia.....	547
Poultices, of bread and water.....	588	Putrid fever.....	138
do. of arrowroot.....	588	Putty powder, poison.....	559
do. of alum.....	588	Pyroligneous acid.....	541
do. of charcoal.....	588	Pyrosis	224
do. of yeast.....	588		
do. of hemlock.....	588	Q	
do. of linseed meal.....	588	Quacks and quackery.....	52
do. of carrot.....	589	Quinine mixture.....	141
do. of chlorinated soda.....	589	do. when to discontinue.....	195
do. of mustard.....	589		
Powders, Dr. Gregory's.....	591	R	
do. gray.....	603	Rash, nettle.....	205
do. for fevers.....	182	Raspberry vinegar-water.....	90
Pregnancy, management during... 433		Rationale of hydropathy.....	60
do. costiveness during.....	435	Rectum, blood from.....	208
do. exercise during.....	436	do. stricture of.....	375
do. clothing and bathing		do. prolapse in children.....	524
during.....	436, 437	do. fissure of.....	376
do. signs of	440	do. prolapse of.....	373
do. piles and palpitation		Red gum.....	548
during.....	446, 447	do. lead, poison.....	562
do. whites and headache		do. precipitate, poison.....	558
during	450	Remitting bilious fever.....	154
do. pain in side during... 450		Renal dropsy.....	287
do. cramps during.....	449	Rennet whey.....	91
Prevention of miscarriage.....	450	Repletion, disease of.....	69
do. of disease.....	17	Respiration	19
Pressure in cancer.....	348	Respiratory food.....	63
Profuse menstruation.....	402	Restorative mixture.....	80
Prolapse of anus.....	524	Resuscitation from drowning.....	574
do. of bladder.....	387	Retention of the periods.....	401
do. of womb.....	388	Re-vaccination.....	537
Prostate gland, enlargement of.... 381		Rheumatism	191
Prurigo.....	295	do. chronic.....	193
Pruritus	304	Rheumatic ophthalmia.....	169
Prussic-acid as poison.....	563	do. fever.....	185
Psoriasis	297	Rice and apples.....	93
Pudding, arrowroot.....	92	do. pudding	94
do. boiled bread.....	93	do. gravy.....	95

	PAGES		PAGES
Rickets.....	492	Shingles	205
Ringworm.....	537	Sickness, morning.....	442
Roasting	66	Sick stomach.....	611
Rooms, dimensions and aeration...	23	Siesta, necessary in certain cases..	21
Rose rash.....	288	Signs of pregnancy.....	440
Round worm.....	245	Silver, as a poison.....	560
Rubeola.....	529	Sinapism.....	585
Rumination, human.....	318	Skin diseases.....	288
Rue, poison	565	do. pores of.....	41
Rum.....	80	do. of stomach distended in preg-	
Running.....	686	nancy	449
do. tetter.....	293	Sleep, duration of.....	31
Rupia.....	288	Small-pox.....	196
Ruptures.....	582	Smelling-salts, poison.....	556
Rye grass, poison.....	566	Snake-bites.....	567
do. spurred	564	Snow-balls of rice, etc.....	93
S		Soda, carbonate of, poison.....	556
Sago posset.....	92	do. washing, poison.....	556
do. milk.....	95	do. water and milk.....	92
Sal ammoniac, poison.....	556	do. chloride of, injection.....	387
Salivation, signs of.....	172	Solid portions of the body.....	705
do. during pregnancy.....	448	Sonderland on cow-pox.....	536
Salt, its uses.....	737	Sore throat.....	177
do. of tin, poison.....	559	do. nipples after delivery.....	454
Salting and pickling.....	64	Soup, rice.....	94
Saltpeter, poison.....	560	do. vermicelli	94
Sarsaparilla.....	605	do. maccaroni.....	94
Sausages.....	567	Sowans.....	93
do. at times poisonous.....	64	Spanish fly, poison.....	561
Sardonic laugh.....	228	Specifics	715
Scall, running.....	293	Spermaceti ointment.....	584
do. papulous	294	Spinal curvature.....	413
Scabies, the itch.....	298	do. irritation	417
Scarlet fever.....	198	Spirit lotion.....	583
Scalds or burns.....	356, 577	Spirits, ardent, poison.....	564
Scar, vaccine.....	536	Spontaneous combustion.....	83
Scirrhus	345	Spotted fever.....	138
Scour, green.....	515	Sprains	578
Scrofula.....	482	Squills, poison.....	562
do. in the ear.....	492	Staves acre, poison.....	562
do. do. neck.....	491	Sterility, female.....	428
Scurvy, land.....	302	Still-born children.....	542
do. sea.....	303	STIMULANT MEDICINES.....	596
Sea-sickness	251	Arnica	
Secretions, use of.....	34	Horseradish	
Secretory glands.....	719	Ammonia	
Sedentary habits.....	42	Assafetida	
Serpents, poison.....	567	Camphor	
		Cantharides	

	PAGES		PAGES
STIMULANT MEDICINES.....	596	Tea, chicken	89
Musk		do. lemon-peel.....	89
Nutmeg		do. marsh-mallow.....	90
Valerian		do. apple.....	89
Ether		Teeth, permanent.....	480
Ginger, nutmeg		Teething.....	479
Pepper, capsicum		Test, Bryce's.....	534
Wine		Tests for urinary gravel.....	337
Stings of insects.....	567	Tetanus	229
Stomach, blood from.....	207	Tetter, or herpes.....	289
do. inflammation of.....	185	do. running or crusted.....	293
do. its action on food.....	745	do. dry	297
do. Beaumont's observations.	746	Thirst.....	724
Stomatitis	509	Thorn-apple, poison.....	565
Stones, gall.....	313	Threadworm.....	246
do. urinary	328	Thrush.....	509
Strangury.....	323	Tic douloureux.....	353
Strangling	576	Tin as a poison.....	559
Stricture.....	321, 380	Tinea capitis.....	537
Stroke of lightning.....	576	Tissue, cellular indurated.....	546
Strophulus.....	548	Toast-water	89
Study and play should alternate...	30	Tobacco, poison.....	564
Stupes.....	590	do. clyster.....	230
Strychnine, poison.....	564	TONIC MEDICINES.....	598
Substances, foreign, in eye or ear..	577	Calumba	
Sudamina	292	Chamomile	
Sudorifics.....	601	Quinine	
Sugar in urine.....	332	Gentian	
do. of lead, poison.....	562	Orange-peel	
Sulphur in the body.....	737	Cloves	
do. liver of.....	560	Cascarilla	
Sulphuric acid, poisoning by.....	555	Angustura bark	
Sulphureted hydrogen.....	573	Peruvian bark	
Supper.....	68	Quassia	
Suspended animation.....	570	Valerian	
Sun	709	Tongue, inflammation of.....	176
Sunstroke.....	171	do. tied	543
Sweat promoters.....	601	Tonsils, inflammation of.....	177
Sweetbread.....	96	Tonsilitis	177
Sycosis	307	Toothache.....	352
Syncope.....	232	do. during pregnancy.....	448
T		Trachea, inflammation of.....	179
Tapeworm.....	243	Tractors, Perkins's metallic.....	53
Tapioca pudding.....	94	Training	660
Tartar emetic, poison.....	557	Treatment, modes of.....	130
Tea	68	do. of childhood.....	486
do. linseed	90	Trichina spiralis.....	623
do. beef and mutton.....	89	Tripe.....	96
		Turbeth mineral, poison.....	553

	PAGES		PAGES
Turnips and carrots.....	94	Vinegar and tamarind wheys.....	91
Turtle soup.....	89	Virgin's bower, poison.....	562
Tympany.....	281	Vitriol, blue, poison.....	559
U		Vitriol, white, poison.....	560
Ulcer, atonic.....	288	do. oil of, do.....	555
do. corroding, of the womb.....	412	do. spirits of, poison.....	555
Umschlags.....	60	Vomiting.....	224, 251
Urethra, inflammation of.....	190	do. of blood.....	207
Urethritis.....	190	W	
Uric acid gravel.....	331	Walking.....	680
Urinary gravel.....	330	Wall-pepper, poison.....	562
do. stone.....	328	Ward's paste.....	209
Urine, pus, or mucus in.....	332	Warts.....	301
do. difficulty of passing.....	323	Washerwoman's itch.....	297
do. immoderate flow of.....	322	Washes for eyes.....	583
do. suppression of.....	324	Water-cure, rationale of.....	60
do. sugar in, see diabetes.....	332	do. brash.....	224
Urticaria.....	205	do. in pericardium.....	369
Uvula, inflammation of.....	177	do. in the head.....	507
V		do. do. spurious.....	504
Vaccination described.....	532	do. raspberry vinegar.....	90
Vaccine vesicle.....	533	do. barley.....	90
Valves of the heart, disease of.....	370	do. how to freeze.....	583
Varicella.....	288	Waters, mineral.....	121
Vaulting.....	694	do. aluminous.....	123
Veal tea.....	89	do. sulphureous.....	124
Vegetable diet.....	736	do. saline.....	124
do. albumen, caseine, and		do. calcareous.....	125
fibrine.....	63	do. alkaline.....	125
do. kingdom.....	708	do. Glauber's salts.....	125
Vegetables, constituents of.....	63	do. effects of mineral in dis-	
do. plain boiled.....	94	ease.....	126
Vegetarians.....	74	Watery discharge from the womb..	412
Veins.....	718	Weaning.....	462
do. of legs, enlarged in preg-		do. indigestion during.....	515
nancy.....	448	Weights and measures.....	793
do. inflammation of.....	373	Wet-sheet, in hydropathy.....	58
Venereal disease.....	379	Whey, rennet.....	91
Ventilation, supply of air necessary		do. vinegar and tamarind.....	91
for life.....	18, 19	do. mustard.....	91
do. good effects from.....	572	Whisky.....	80
Verdigris, poison.....	559	Whites, the.....	391
Vermicelli soup.....	94	do. during pregnancy.....	450
Vermillion, poison.....	558	White vitriol, poison.....	560
Vertigo.....	233	do. copperas, poison.....	560
Vesicular eruption.....	205	do. lead, do.....	562
Vinegar, raspberry water.....	90	Whitlow.....	622
		Whooping-cough.....	548

	PAGES		PAGES
Whortleberry leaves, infusion of...	210	Worm medicines.....	592
Wines.....	76	do. fever.....	501
do. white, whey.....	91	do. powder, poison.....	559
do. barley aromatic.....	96	Worms	241
do. mulled	96	do. tape.....	243
do. of United States.....	77	do. round.....	245
Wine-glass, how much.....	793	do. thread.....	246
Wind on stomach, cure of.....	238	do. guinea	248
Windy swelling.....	280	do. in face.....	305
Womb, cancer of.....	383	Wounds	579
do. falling down of.....	388		
do. polypus of.....	409		
do. cauliflower excrescence of..	411		
do. corroding ulcer of.....	412		
do. watery discharges from....	412		
do. inflammation of.....	430		
do. irritable	432		
do. leucorrhoea from.....	394		
do. chronic inflammation of....	431		
Women, diseases of.....	383		

Y

Yellow fever.....	162
do. gum.....	547
do. headed pimples produced by ointments, etc.....	584

Z

Zinc, as a poison.....	560
------------------------	-----



R. W. CARROLL & CO.,
PUBLISHERS,

INVITE ESPECIAL ATTENTION TO THEIR

New Subscription Books:

JAMES'S AMERICAN HOUSEHOLD BOOK OF MEDICINE.

(Just issued.)

RECOLLECTIONS OF ITINERANT LIFE, By REV. GEO. BROWN,
(Of Springfield, with a portrait.)

DIVERS VIEWS AND OPINIONS OF PETROLEUM V. NASBY.
(With thirteen illustrations.)

DADD'S THEORY AND PRACTICE OF VETERINARY SURGERY.
(In Press.)

These books are all printed on good paper, handsomely bound, and finely
illustrated.

SOLD ONLY BY AGENTS.

A NEW WORK ON HORSES AND CATTLE.

Sold only by Agents as a Subscription Book.

R. W. CARROLL & Co.,

Have in press, and will issue during the coming season, an entirely new work, by the celebrated DR. GEO. H. DADD, who stands at the head of the Veterinary Profession in this country. The work is entitled,

DADD'S
THEORY AND PRACTICE
OF
VETERINARY MEDICINE AND SURGERY,

Embracing the Curative Treatment of Diseases Incidental to Horses and Cattle by means of a Class of New Remedies lately introduced by the Author, and hitherto unknown to Veterinary Science.

Elegantly Illustrated

WITH A SERIES OF ANATOMICAL AND ILLUSTRATIVE ENGRAVINGS,
FROM DESIGNS BY THE BEST ARTISTS.

This work has been many months in preparation, and no pains or expense have been spared to make it, in all respects, the most complete and exhaustive work on Horses and Cattle ever published, and a thorough vade mecum for the farmer and farrier.

Liberal Terms to Agents throughout the United States.

R. W. CARROLL & Co., Publishers,

117 WEST FOURTH STREET, CINCINNATI, O.

117 WEST FOURTH STREET,
CINCINNATI, O.

—
WHOLESALE AND RETAIL DEPARTMENT.
—

R. W. CARROLL & CO.,

WHOLESALE AND RETAIL

Booksellers & Stationers,

KEEP CONSTANTLY ON HAND

THE LARGEST AND BEST ASSORTED STOCK OF

BOOKS AND STATIONERY,

OF EVERY IMAGINABLE KIND,

To be found in any one House in the Mississippi Valley. They offer these at

REDUCED PRICES,

And will always sell on as favorable terms as the market will permit, or as any other House can give. Among the great variety of articles sold by

R. W. CARROLL & CO.

are the following:

SCHOOL BOOKS OF EVERY KIND USED IN THE WEST,

Law Books, Medical Books,
Scientific Books, Theological Books,
Agricultural Books, and all Varieties of
Miscellaneous Books, including Histories, Biographies, Travels, Novels, and Illustrated Works; Photograph Albums and Cards, Plain and Fancy Letter and Note Paper, Foreign and Domestic Stationery, Foolscap and Flatcap Paper, Gold Pens Inkstands, Steel and Quill Pens, Lead Pencils, Chess Boards, Cribbage Boards, Paper Weights, Paper Cutters, Card Cases, Pocket Books, Portfolios, Writing Desks, Pocket Cutlery, Diaries, Memorandum, Scrap and Blank Books.

In fact their stock includes every variety of Books and Stationery, which they invite Dealers to examine before purchasing elsewhere, as they are confident they offer the greatest facilities, and can give satisfaction.

R. W. CARROLL & CO.,
117 West Fourth Street, Cincinnati.
(Late Opera-House Bookstore.)

copy

LIBRARY OF CONGRESS



0 021 067 369 6